Multi-Hazard Mitigation Plan

Kendall County

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Kendall County, Illinois

Adoption Date: -- _____ --

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Section 1 - Public Planning Process

1.1 Narrative Description

Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals; hazard mitigation planning and the subsequent implementation of resulting projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created **Haz**ards **US**A **M**ulti-**H**azard (HAZUS-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses. The Illinois Emergency Management Agency (IEMA) has determined that HAZUS-MH should play a critical role in Illinois's risk assessments. Southern Illinois University, Carbondale (SIUC) and the Polis Center (Polis) at Indiana University Purdue University Indianapolis (IUPUI) are assisting Kendall County planning staff with performing the hazard risk assessment.

1.2 Planning Team Information

The Kendall County Multi-Hazard Mitigation Planning Team is headed by Terry Tichava, who is the primary point of contact. Members of the planning team include representatives from various county departments, cities and towns, and public and private utilities. Table 1-1 identifies the planning team individuals and the organizations they represent. In December 2010, Terry Tichava retired and Chief Deputy Scott Koster replaced him.

Table 1-1: Multi Hazard Mitigation Planning Team Members

Name	Title	Organization	Jurisdiction
Stan Laken	Technology Director	Kendall County	Kendall County
Dave Farris	Director	KenCom 911 Emergency Communications	Kendall County
Terry Tichava	Chief Deputy and EMA Director	Kendall County Sheriff Department and Kendall County	Kendall County
Jerry A. Dudgeon	Director	Kendall County Planning, Building, and Zoning	Kendall County
Joe Gillespie	EMA Director	Kendall County Sheriff Department	Kendall County
Tracy Page	Executive Assistant	Kendall County Sheriff Department and Kendall County	Kendall County
Jeff Spang		Little Rock-Fox Fire Protection	Kendall County

Name	Title	Organization	Jurisdiction
		District	
Jonathan Whowell	LT	Plano Police Department	City of Plano
Bill King	Chief	Sandwich Fire Department	City of Sandwich
Rich Hart	Chief	Yorkville Police Department	The United City of Yorkville
Michael Hitzemann	Chief	Bristol-Kendall Fire Department	The United City of Yorkville
Jackie Lemmerhirt-Kowalski	Mayor of Millbrook	Village of Millbrook	Village of Millbrook
Lowell Mathre		Newark Fire Department	Village of Newark
Jim Jensen	Captain	Oswego Police Department	Village of Oswego
Jeff Warren	Lieutenant	Oswego Fire Protection District	Villages of Oswego and Montgomery and Boulder Hill CDP
William Dostor	Chief	Plainfield Police Department	Village of Plainfield
John Konopek	Commander	Plainfield Police Department	Village of Plainfield
Lynette Bergeron	Assistant Director	KenCom 911 Emergency Communications	Village of Plattville

The Disaster Mitigation Act (DMA) planning regulations stress that planning team members must be active participants. The Kendall County MHMP committee members were actively involved on the following components:

- Attending the MHMP meetings
- Providing available GIS data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

An MHMP kickoff meeting was held at the Kendall County Sheriff's Office on March 10, 2010. Representatives from Southern Illinois University explained the rationale behind the MHMP program and answered questions from the participants. The SIUC also provided an overview of HAZUS-MH, described the timeline and the process of the mitigation planning project, and presented Kendall County with a Memorandum of Understanding (MOU) for sharing data and information.

The Kendall County Multi-Hazard Mitigation Planning Committee met on March 10, 2010, April 14, 2010, June 9, 2010, August 11, 2010 and October 13, 2010. Each meeting was approximately two hours in length. The meeting minutes are included in Appendix A. During these meetings, the planning team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects, and assisted with preparation of the public participation information.

1.3 Public Involvement in Planning Process

An effort was made to solicit public input during the planning process, and a public meeting was held on June 9, 2010 to review the county's risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains articles published by the local newspaper throughout the public input process.

1.4 Neighboring Community Involvement

The Kendall County planning team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The team also invited participation from adjacent counties to obtain their involvement in the planning process. Details of neighboring stakeholders' involvement are summarized in Table 1-2.

Table 1-2: Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Organization	Participation Description
Dennis J. Miller, Coordinator	DeKalb County	DeKalb County Emergency Services and Disaster Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Norman Sturm, Director	Dupage County	Dupage County Office of Homeland Security and Emergency Management	Invited to participate in public meeting, reviewed the plan and provide comments.
Don Bryant	Kane County	Kane County Office of Emergency Management	Invited to participate in public meeting, reviewed the plan and provide comments.
Jim Lutz, Director	Grundy County	Grundy County Emergency Management Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Harold Damron, Director	Will County	Will County Emergency Management	Invited to participate in public meeting, reviewed the plan and provide comments.

1.5 Review of Technical and Fiscal Resources

The MHMP planning team has identified representatives from key agencies to assist in the planning process. Technical data, reports, and studies were obtained from these agencies. The organizations and their contributions are summarized in Table 1-3.

Table 1-3: Key Agency Resources Provided

Agency Name	Resources Provided
Illinois Environmental Protection Agency	Illinois 2008 Section 303(d) Listed Waters and watershed maps
U.S. Census	County Profile Information, e.g. Population and Physical Characteristics
Department of Commerce and Economic Opportunity	Community Profiles
Illinois Department of Employment Security	Industrial Employment by Sector
NOAA National Climatic Data Center	Climate Data
Illinois Emergency Management Agency	2007 Illinois Natural Hazard Mitigation Plan
Illinois Water Survey (State Climatologist Office)	Climate Data
United States Geological Survey	Physiographic/Hill Shade Map, Earthquake Information, Hydrology
Illinois State Geological Survey	Geologic, Karst Train, Physiographic Division and Coal Mining Maps

1.6 Review of Existing Plans

Kendall County and its local communities utilized a variety of planning documents to direct community development. These documents include land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes. The planning process also incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 1-4 lists the plans, studies, reports, and ordinances used in the development of the plan.

Table 1-4: Planning Documents Used for MHMP Planning Process

Author(s)	Year	Title	Description	Where Used
FEMA	2009	Kendall County Flood Insurance Study	Describes the NFIP program, which communities participates; provide regulatory floodplain maps	Sections 4 and 5
Supervisor of Assessments	2009	GIS Database	Parcel and Assessor Data For Kendall County.	Section 4
State of Illinois Emergency Management Plan	2007	2007 Illinois Natural Hazard Mitigation Plan	This plan provides an overview of the process for identifying and mitigating natural hazards in Illinois as require by the Disaster Mitigation Act of 2000.	Guidance on hazards and mitigation measures and background on historical disasters in Illinois.
Kendall County	2009	Kendall County Resource Management Concept Plan	The Comprehensive Resource Management plan is intended to provide guidance for future development in the Kendall County for the next five to ten years.	Section 3; Land Use and Development Plans
Village of Oswego	2009	Village of Oswego Comprehensive Plan	The Comprehensive Plan is intended to provide guidance for future development in Village of Oswego.	Section 3; Land Use and Development Plans
DeKalb County Government	2003	Land Use Plan, City of Sandwich	The Land Use Plan is intended to guide future development in the City of Sandwich.	Section 3; Land Use and Development Plans
United City of Yorkville	2008	Kendall County Land Resource Management Plan	The Comprehensive Plan is intended to provide guidance for future development in Yorkville.	Section 3; Land Use and Development Plans
Village of Plainfield Community Development Department	2007	Village of Plainfield Future Land Use Plan	The Future Land Use Plan is intended to guide future development in the Village of Plainfield..	Section 3; Land Use and Development Plans
Village of Montgomery	2010	Village of Montgomery Land Use Development Plan	The Land Use Plan is intended to guide future development in the Village of Montgomery	Section 3; Land Use and Development Plans
City of Plano	2005	Draft Future Land Use Plan	The Land Use Plan is intended to guide future development in the City of Plano.	Section 3; Land Use and Development Plans
Village of Minooka	2005	Village of Minooka, Comprehensive Plan	The Comprehensive Plan is intended to provide guidance for future development in Village of Minooka.	Section 3; Land Use and Development Plans

Section 2 - Jurisdiction Participation Information

The incorporated communities included in this multi-jurisdictional plan are listed in Table 2-1.

Table 2-1: Participating Jurisdictions

Jurisdiction Name
Kendall County
Boulder Hill CDP
City of Plano
City of Sandwich
The United City of Yorkville
Village of Lisbon
Village of Millbrook
Village of Montgomery
Village of Newark
Village of Oswego
Village of Plattville

2.1 Adoption by Local Governing Body

The draft plan was made available on October 13, 2010 to the planning team for review. Comments were then accepted. The Kendall County hazard mitigation planning team presented and recommended the plan to the County Commissioners, who adopted it on <date adopted>. Resolution adoptions are included in Appendix C of this plan.

2.2 Jurisdiction Participation

It is required that each jurisdiction participates in the planning process. Table 2-2 lists each jurisdiction and describes its participation in the construction of this plan.

Table 2-2: Jurisdiction Participation

Jurisdiction Name	Participating Member	Participation Description
Kendall County	Terry Tichava	MHMP planning team member
Boulder Hill CDP	Jeff Warren	MHMP planning team member
City of Aurora	Mike Doerzaph	MHMP planning team member
City of Plano	Lt. Jonathan W. Howell	MHMP planning team member
City of Sandwich	William R. King	MHMP planning team member
The United City of Yorkville	Dave Delaney	MHMP planning team member
Village of Montgomery	Jeff Warren	MHMP planning team member
Village of Newark	Lowell Mathre	MHMP planning team member
Village of Oswego	James Jensen	MHMP planning team member

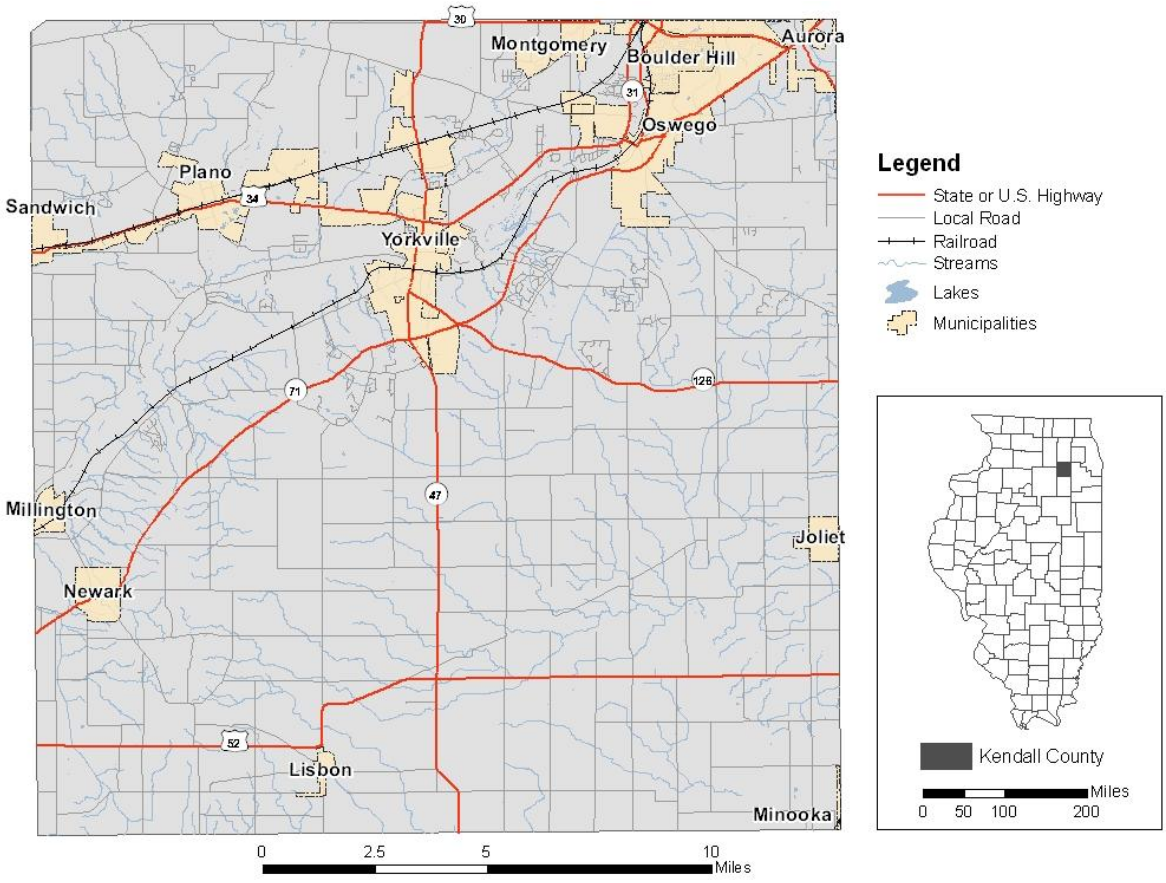
All members of the MHMP planning committee were actively involved in attending the MHMP meetings, providing available Geographic Information Systems (GIS) data and historical hazard information, reviewing and providing comments on the draft plans, coordinating and participating in the public input process, and coordinating the county's formal adoption of the plan.

Section 3 - Jurisdiction Information

Kendall County was formed from LaSalle and Kane Counties in 1841. It was named after Amos Kendall who became the U.S. Postmaster General in 1835 and was an important advisor to President Andrew Jackson. The United City of Yorkville is the county seat.

Kendall County is located in the northeastern portion of Illinois. The county has total land area of 323 square miles. It is bordered by Kane County in the north, DuPage County in the northeast, Will County in the east, Grundy County in the south, LaSalle County in the west, DeKalb County in the northwest. Figure 3-1 depicts Kendall County's location.

Figure 3-1: Kendall County, Illinois



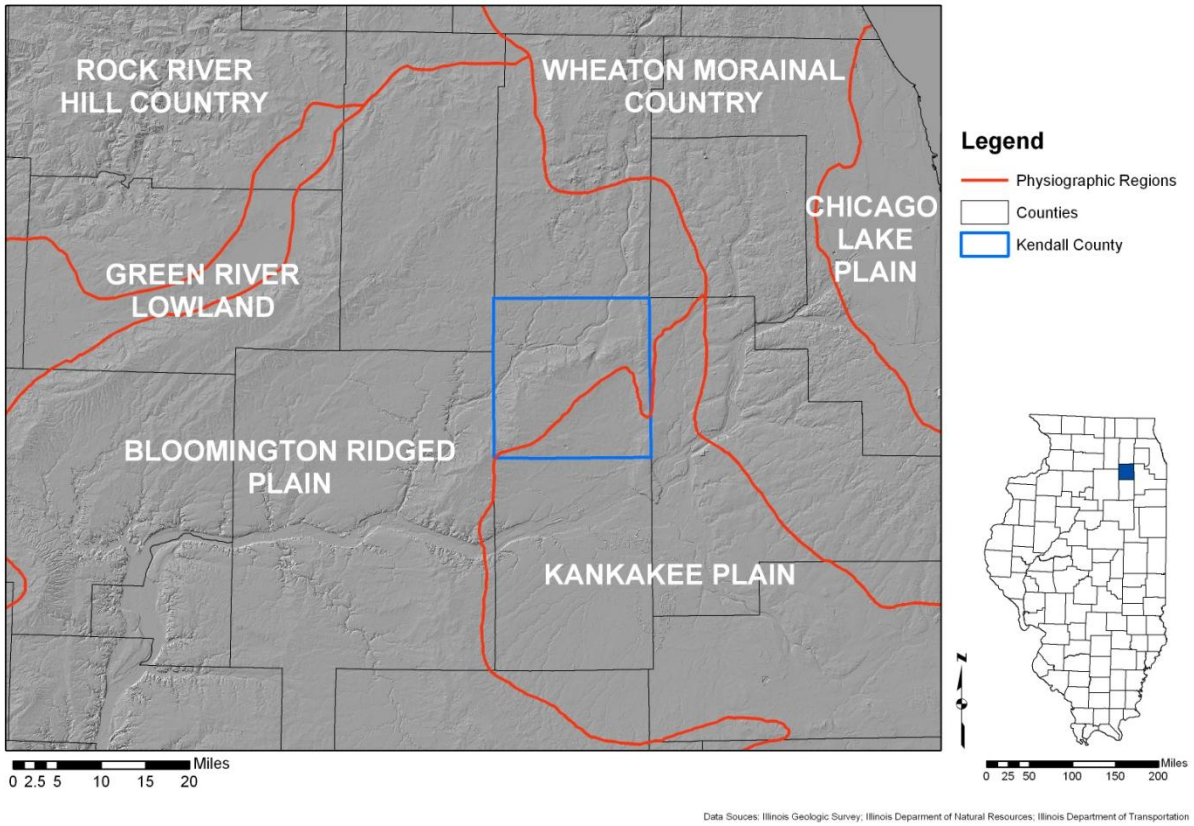
Sources:http://www.cyberdriveillinois.com/departments/archives/irad/Kendall.html; http://www.fedstats.gov/qf/states/17000.html; http://factfinder.census.gov; http://www.genealogytrails.com

3.1 Topography

Kendall County is situated in the Central Lowland Province of the Till Plains Section. The northwestern part of the county is within the Bloomington Ridged Plain physiographic division, and the southeastern part of the county is within the Kankakee Plain physiographic division. The Bloomington Ridged Plain includes most of the Wisconsin Moraines, which are characterized by low, broad concentric ridges with intervening wide stretches of relatively flat or gently

undulating ground moraine. The Kankakee Plain is a level to gently rolling plain. The origin of this physiographic division is believed to be fluviolacustrine. The landforms commonly found on in this division include low moraine islands, glacial terraces, bars, and dunes. Figure 3-2 shows the major physiographic divisions in Kendall County and surrounding region.

Figure 3-2 Physiographic Division in vicinity of Kendall County



3.2 Climate

Kendall County climate is typical of northern Illinois. The variables of temperature, precipitation, and snowfall can vary greatly from one year to the next. Winter temperatures can fall below freezing starting as early as September and extending as late as May. Based on National Climatic Data Center (NCDC) normals from 1971 to 2000, the average winter low is 10.5° F and the average winter high is 34.9° F. In summer, the average low is 55.7° F and average high is 84.2° F. Average annual precipitation is 38.39 inches throughout the year.

3.3 Demographics

In 2000, Kendall County had a population of 54,544. According to American FactFinder (2008), Kendall County experienced a large population increase which almost doubled the population to 103,460 in 2008. The population is spread throughout 9 townships: Big Grove, Bristol, Fox, Kendall, Lisbon, Little Rock, Na-Au-Say, Oswego, and Seward. The largest community in Kendall County is Oswego, which had a population of approximately 13,326 in 2000. The breakdown of population by township is included in Table 3-1.

Table 3-1: Population by Township

Township	2000 Population	% of County
Big Grove	1,526	2.80
Bristol	7,677	14.07
Fox	1,257	2.30
Kendall	4,636	8.50
Lisbon	851	1.56
Little Rock	7,662	14.05
Na-Au-Say	1,672	3.07
Oswego	28,417	52.10
Seward	846	1.55

Source: American FactFinder, 2000

3.4 Economy

American FactFinder reported for 2000 that 83.5% of the workforce in Kendall County was employed in the private sector. The breakdown is included in Table 3-2. Manufacturing represents the largest sector, employing approximately 18.5% of the workforce. The 2000 annual per capita income in Kendall County is $25,188.

Table 3-2: Industrial Employment by Sector

Industrial Sector	% Dist. In County (2000)
Agriculture, forestry, fishing, hunting, and mining	1.3
Construction	9.0
Manufacturing	18.5
Wholesale trade	4.1
Retail trade	11.8
Transportation, warehousing and utilities	5.7
Information	2.7
Finance, insurance, real estate, and rental/leasing	8.5
Professional, technical services	8.2
Educational services, health care, and social assistance	16.3
Arts, entertainment, recreation	6.0
Public administration	3.5

Source: American FactFinder, 2000

3.5 Industry

Kendall County's major employers and number of employees are listed in Table 3-3. The largest employer is Caterpillar, which was established in circa 1930 and has approximately 2,200 employees. The Menard Distribution Center is the second largest nongovernmental employer, with 1,100 employees.

Table 3-3: Major Employers

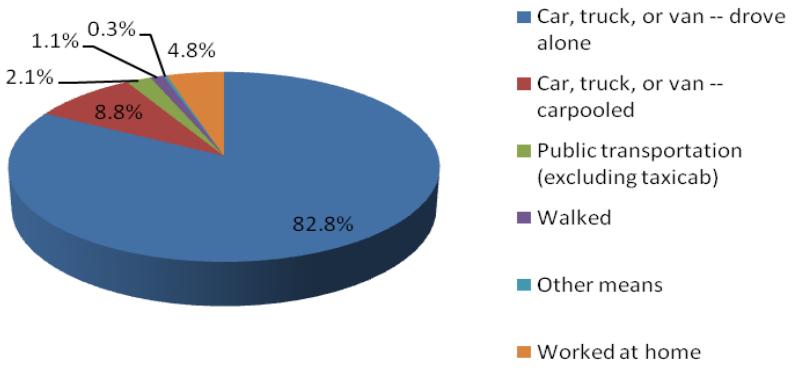
Company Name	City/Town	Year Established	# of Employees	Type of Business
Manufacturing				
Plano Molding	Plano		610	Plastic Manufacturing
Fox Valley Molding	Plano		140	Plastic Manufacturing
Radiac Abrasives	Oswego	1997	200	Industrial Abrasives, Diamond Cutting
Robb Container	Yorkville		80	Plastic Containers
Wrigley Manufacturing Company	Yorkville		355	Manufacturing
Avtec Industries	Oswego	1970	155	Food Service Equipment Manufacturing
Catepillar Tractor Co.	Oswego	1958	3200	Heavy Equipment Manufacturing
Health Care				
Tillers Healthcare	Oswego	1972	120	Nursing Home
Hillside Healthcare	Yorkville		90	Nursing Home
Rush-Copley Healthcare Center	Yorkville		100	Health Care Center
Schools				
All Public Schools	County Wide		1,600	Education
• *Oswego School District*	*Oswego*		*432*	*Education*
• *Oswegoland Park District*	*Oswego*	*1950*	*107*	*Education/Recreation*
Other				
Menards Distribution Center	County-wide		1,100	Building and Home Hardware Supplies
Wal-Mart	County-wide		520	Retail
Fox River Foods	Montgomery		395	Food Service Distributor
Amuro Confections	Yorkville		370	Bulk Candy Supplier
Jewel/Osco	County Wide		160	Super Markets
Kendall County	Yorkville	1841	260	County Government
YMCA	Plano		150	Human Services
Seaboard Seed	Montgomery		100	Agriculture
AT&T	Plano		80	Telecommunications
Newleyweds Foods	Yorkville		110	Food Service Distributor
Raging Waves Water Park	Yorkville		450	Entertainment
Super Target	Yorkville		175	Retail
Kohls	County-wide		120	Retail

Source: Kendall County Planning Team

Commuter Patterns

According to American FactFinder information from 2000, approximately 29,697 of Kendall County's population are in the work force. The average travel time from home to work is 29.9 minutes. Figure 3-3 depicts the commuting patterns for Kendall County's labor force.

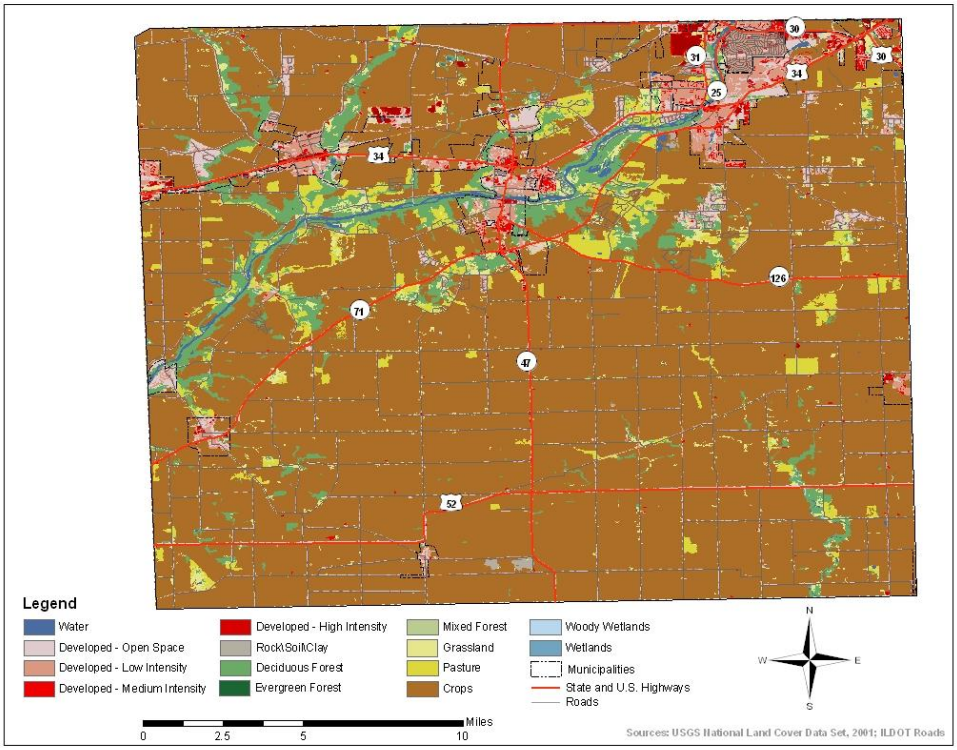
Figure 3-3: Commuter Patterns for Kendall County



3.6 Land Use and Development Trends

Agriculture is the predominant land use in Kendall County with approximately 80% of the land used as pasture or for growing crops. Other significant land uses include manufacturing, commercial, residential, and tourism. Kendall County is home to several spacious parks for fishing, camping, hiking, and water sports. The parks include Yorkville Prairie Nature Preserve, Maramech Woods Nature Preserve, Houses Grove Forest Preserve, Saw Wee Kee Park, and Silver Springs State Park. Figure 3-4 shows the land cover throughout Kendall County.

Figure 3-4: Kendall County Land Cover



Kendall County is one of the fasting developing counties in the United States. The County and nearly all of incorporated communities (Oswego, Plano, Minooka, Montgomery, Plainfield, Sandwich, and Yorkville) have either a comprehensive or a future land use plan (see Table 1-4). The purpose of these plans is to provide guidance for future development. Each plan calls for no development in floodplains and carefully considers placement of residential space in relation to industrial and commercial land uses. Figures 3-5 through 3-12 shows the planned land use in each these jurisdictions.

Figure 3-5: Future Land Use Map for Kendall County

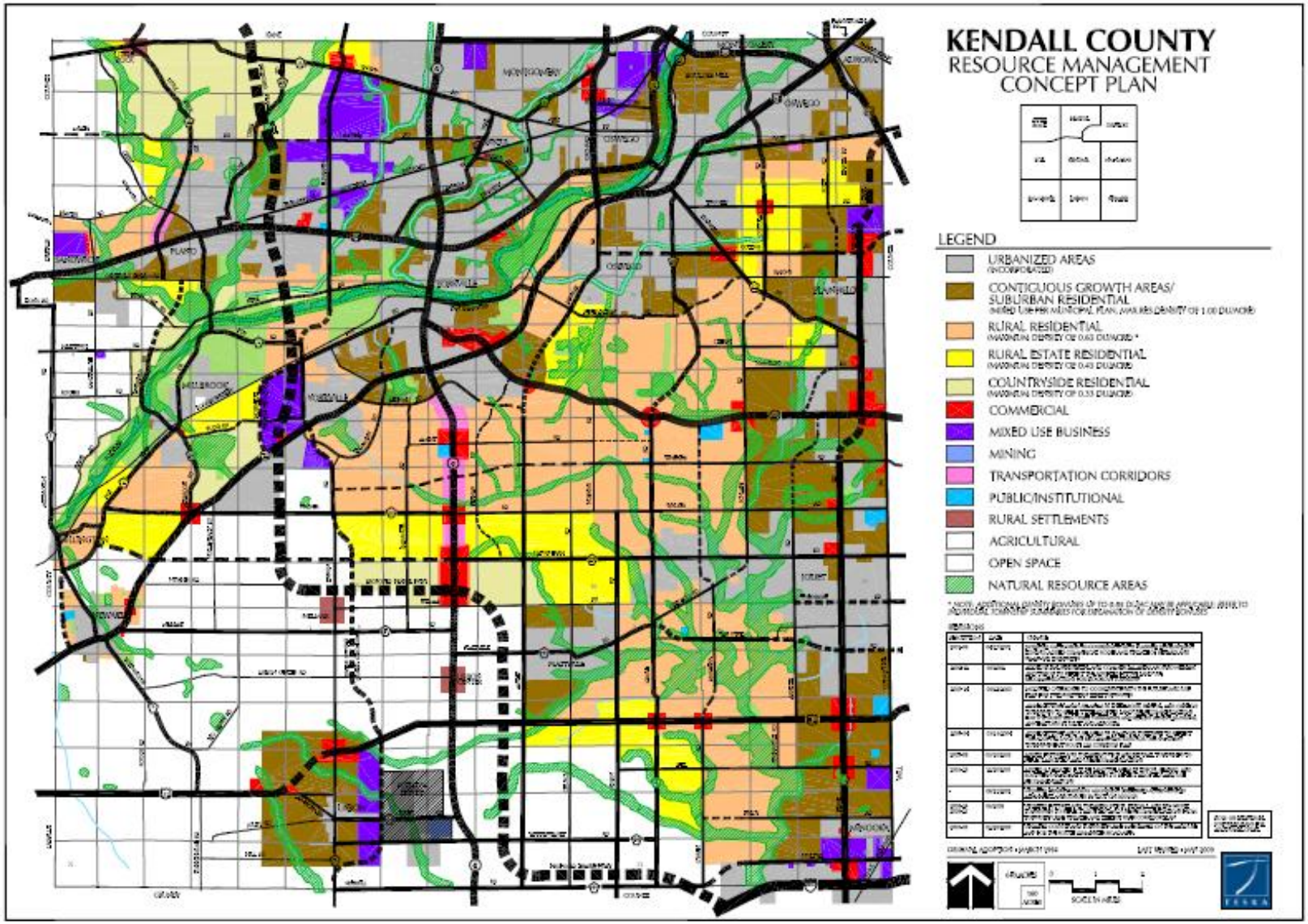
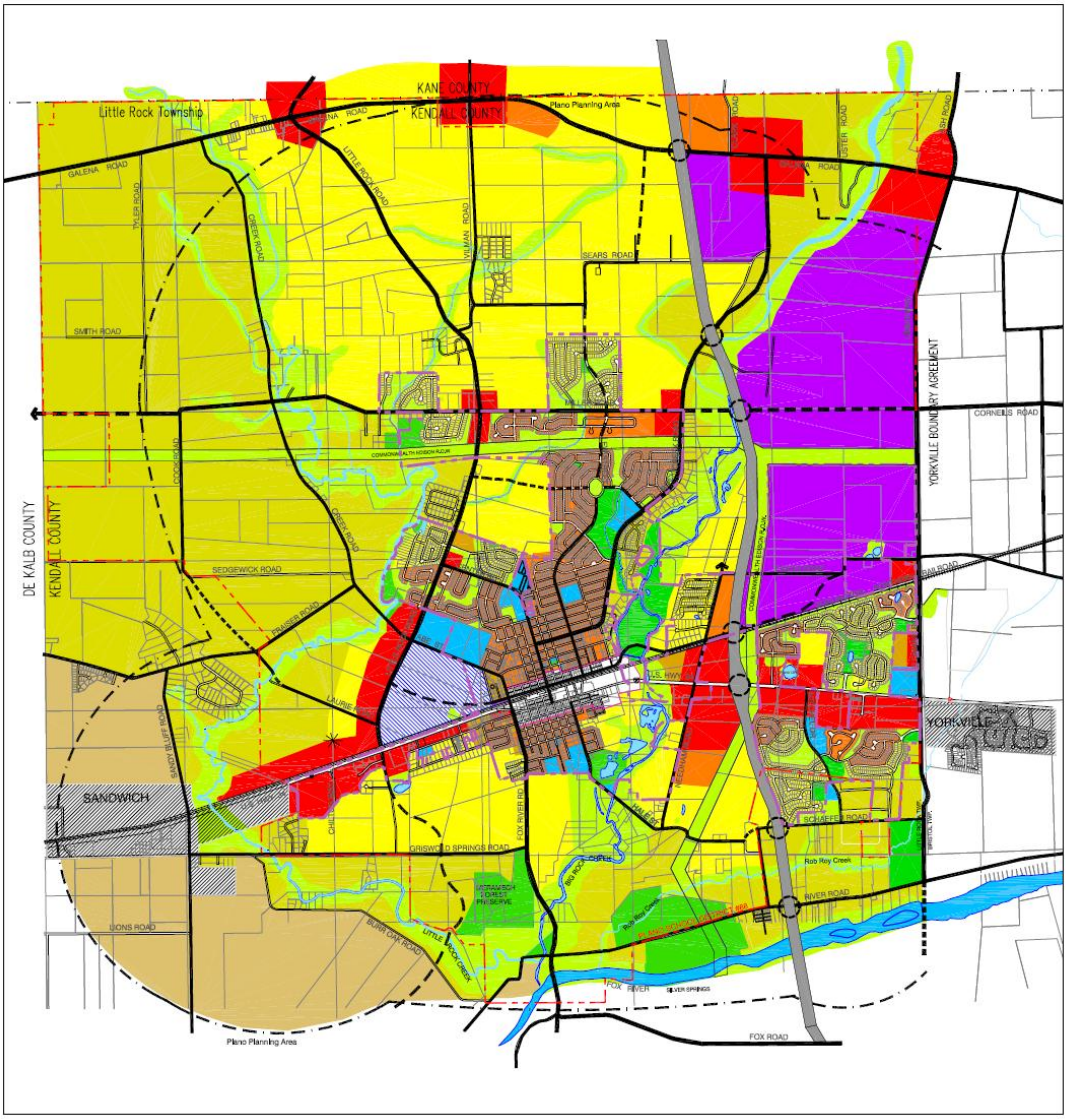


Figure 3-6: Future Land Use Map for City of Plano



LEGEND

- Agricultural
- Estate Residential (0 to .5 DU/AC)
- Low Density Residential (.5 to 2.25 DU/AC)
- Medium Density Residential (2.26 to 6 DU/AC)
- High Density Residential (6DU/AC+)
- Recreation/Park
- Conservation/Private Open Space
- Public/Institutional
- Industrial/Office/Research
- General Business
- City Center Mixed Use
- Transit Oriented Development
- Alternate Location for potential Transit-Oriented Development
- See City Center Plan for detailed area
- Plano School District 88
- Municipal Boundary
- Plano Planning Area

THOROUGHFARE SYSTEM

Existing	Proposed
Primary Arterial	
Secondary Arterial	
Primary Collector	
Secondary Collector	
Proposed Grade Separated Crossing	

DRAFT FUTURE LAND USE

Comprehensive Plan . . . Plano, Illinois

0' 2000' 4000'

April 2005

Figure 3-7: Future Land Use Map for City of Sandwich

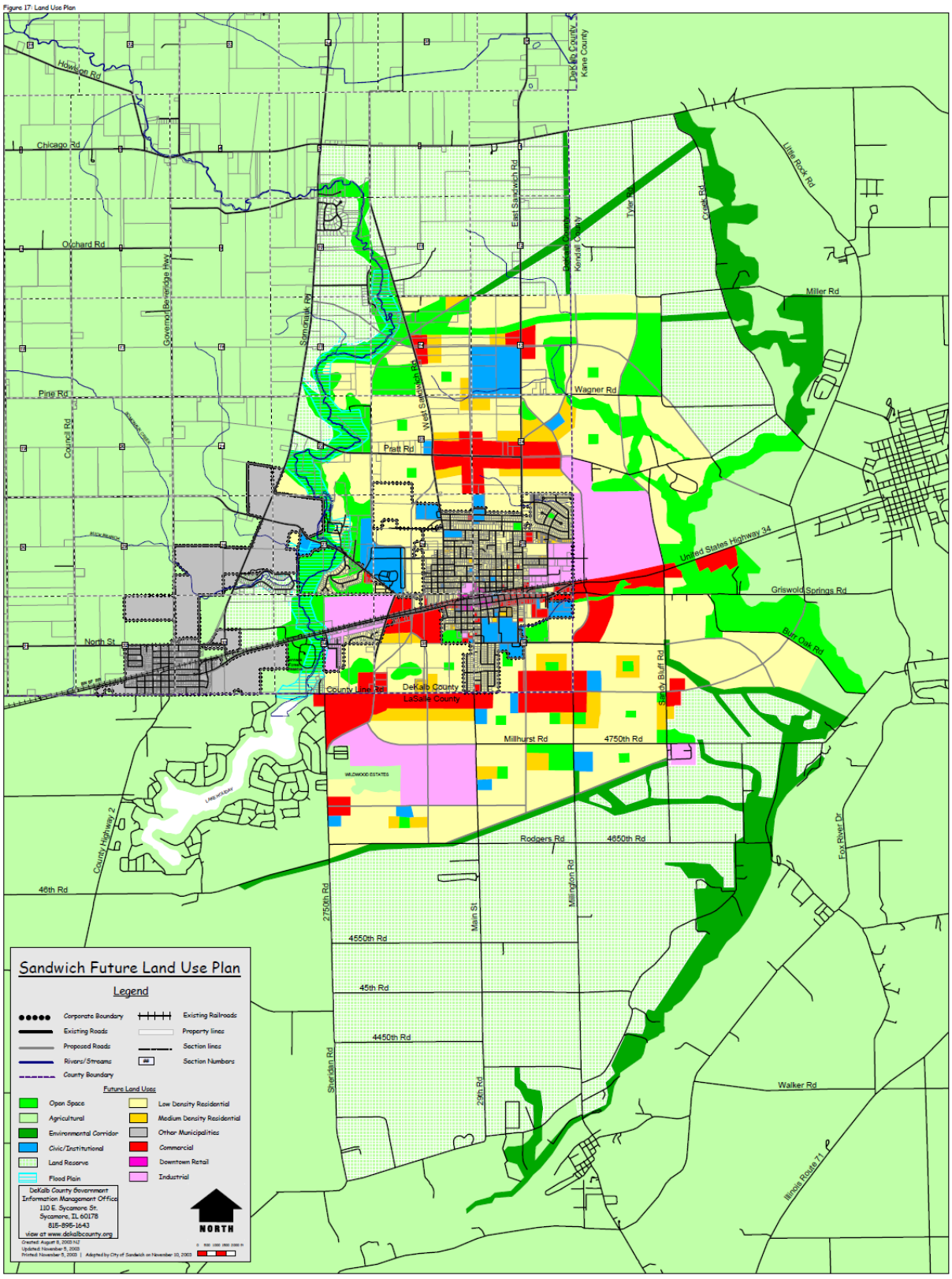


Figure 3-8: Future Land Use Map for The United City of Yorkville

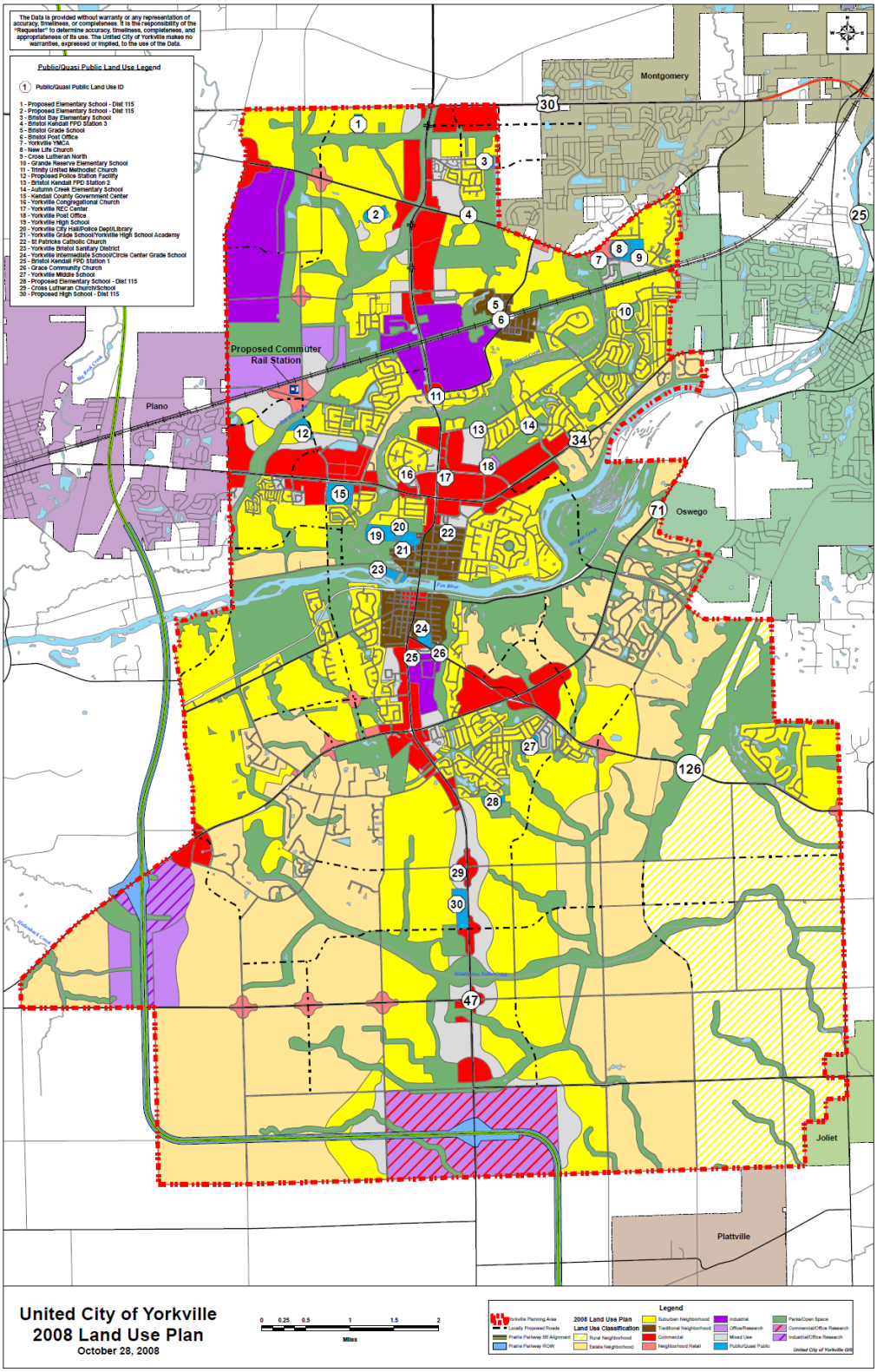


Figure 3-9: Future Land Use Map for Village of Minooka

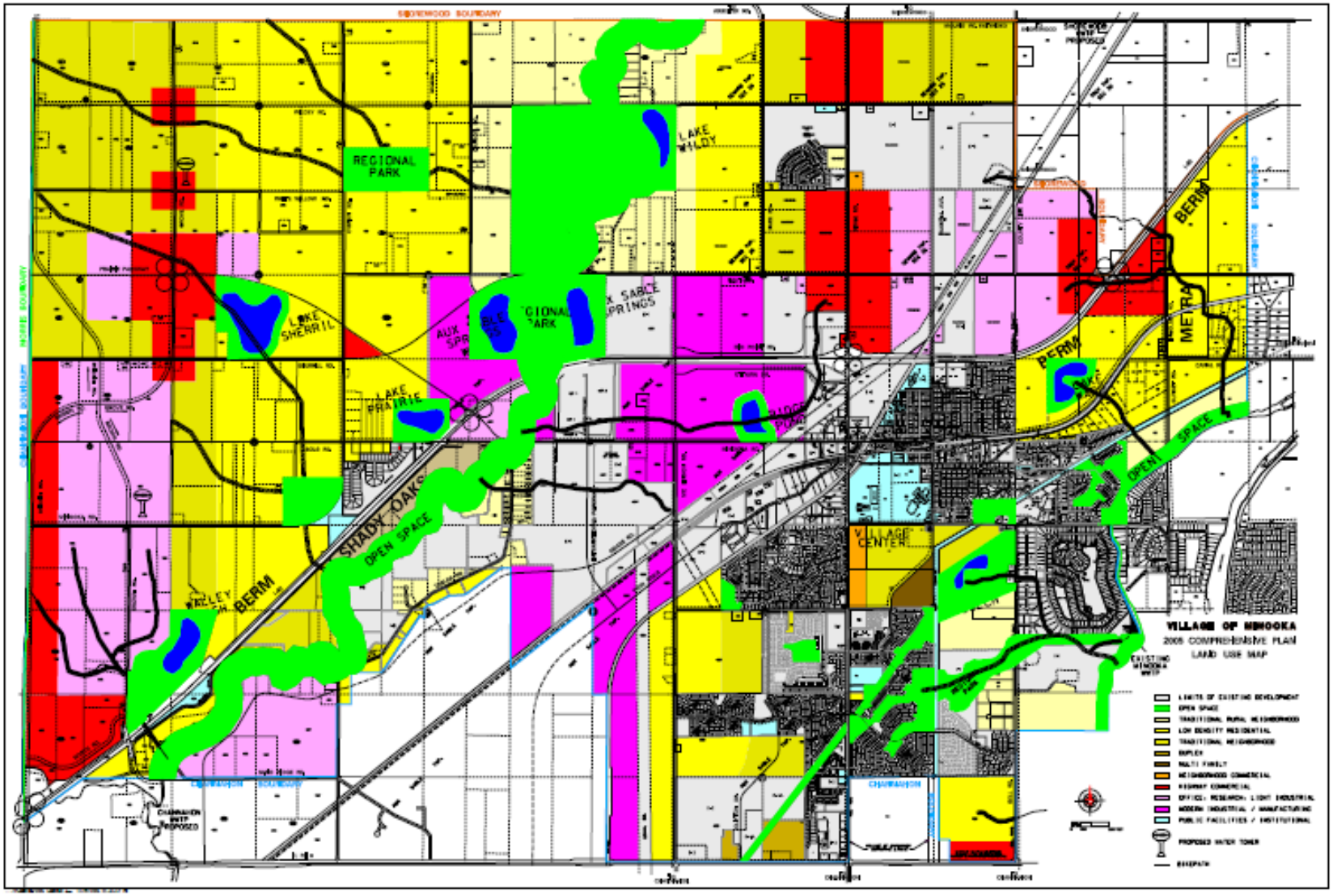


Figure 3-10: Future Land Use Map for Village of Montgomery

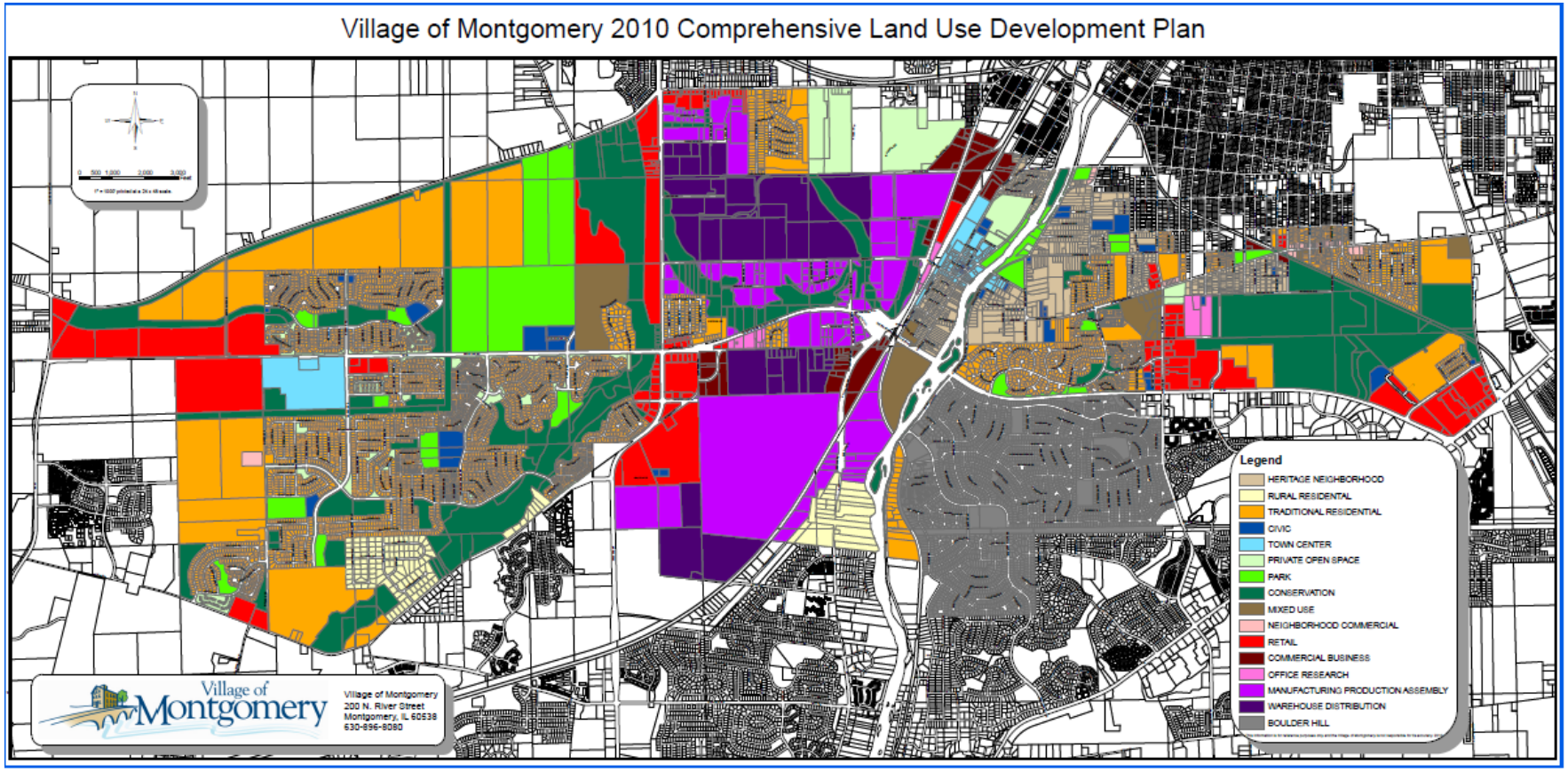


Figure 3-11: Future Land Use Map for Village of Oswego

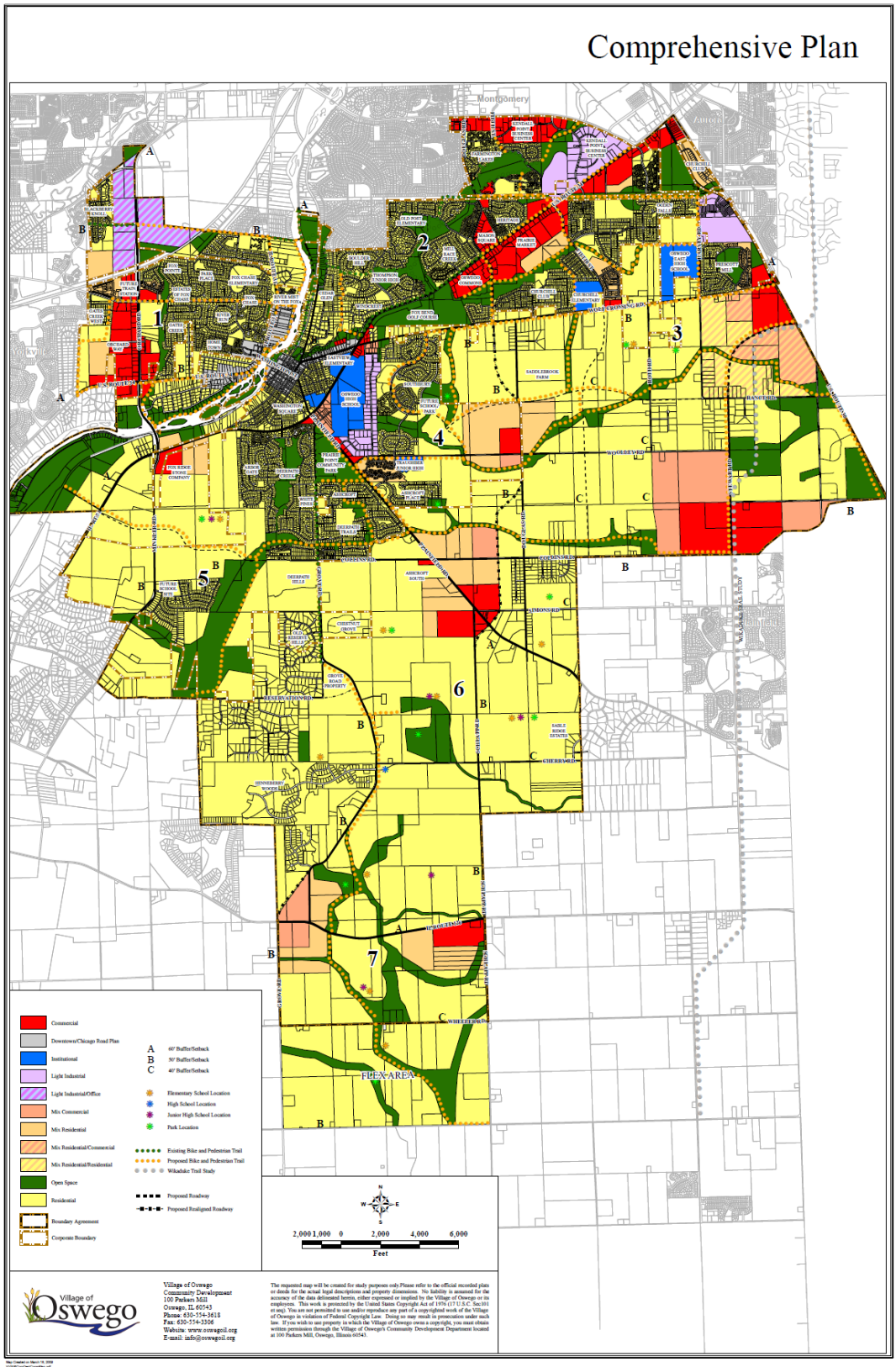
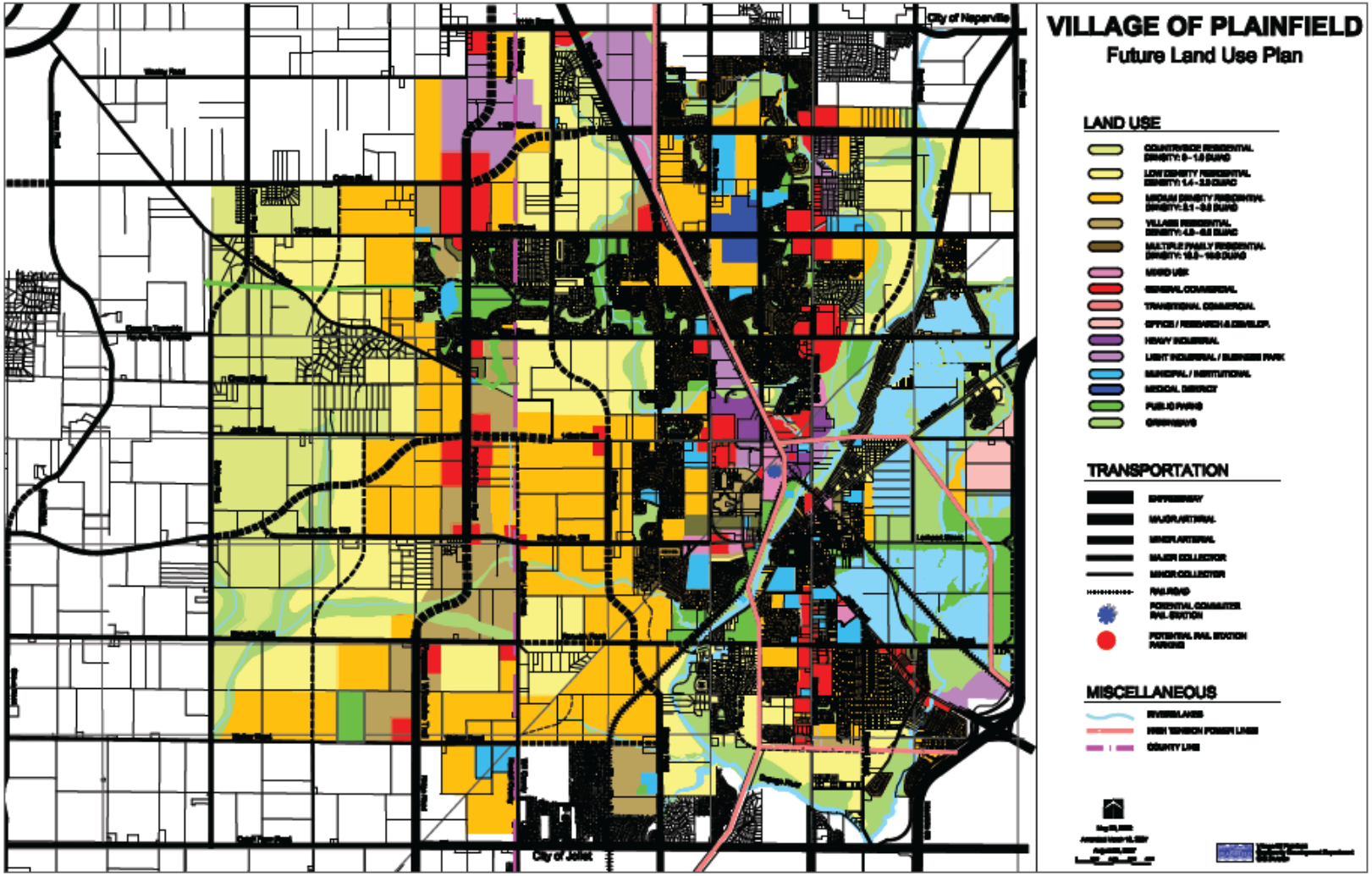


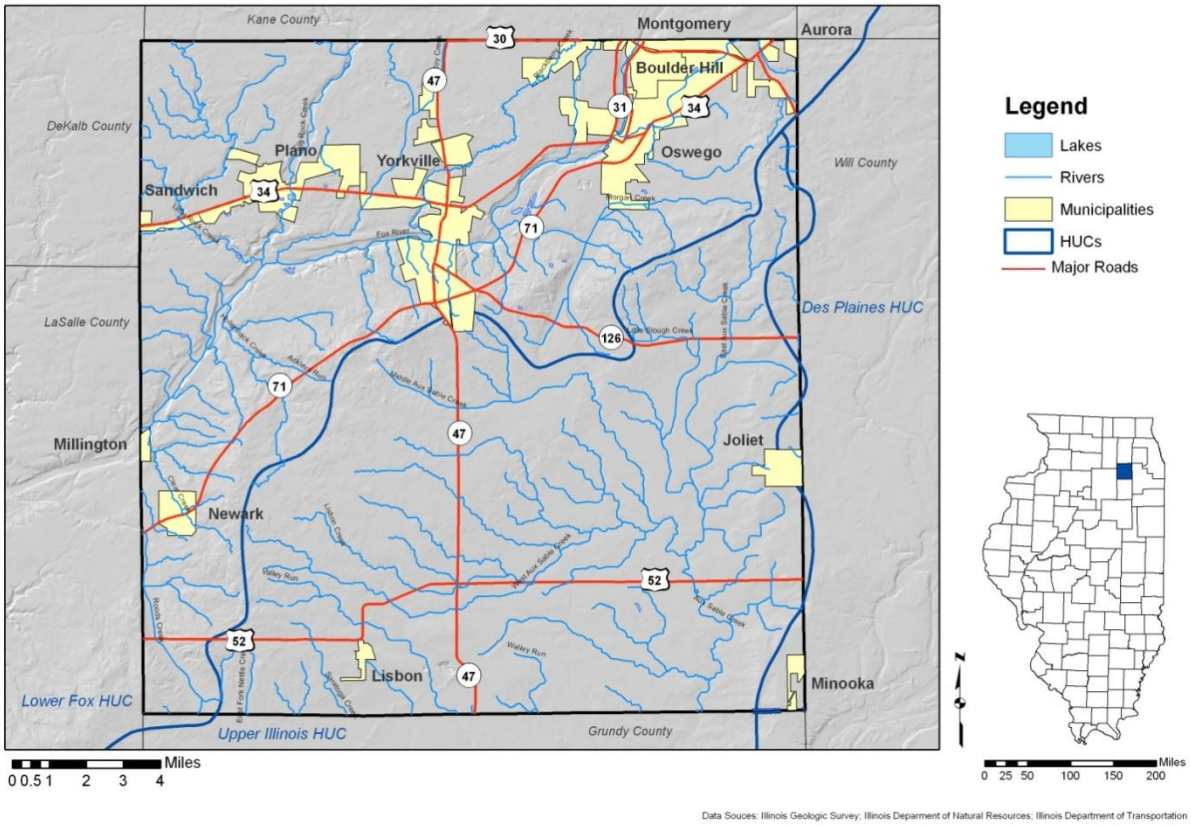
Figure 3-12: Future Land Use Map for Village of Plainfield



3.7 Major Lakes, Rivers, and Watersheds

Kendall County has a number of bodies of water including Lake Plano, Beaver Lake, Millhurst Lake, and Loon Lake. According to the USGS, Kendall County consists of two drainage basins: the Lower Fox (HUC 7120007) and the Upper Illinois (HUC 7120005). Figure 3-14 shows the location of the major water bodies and watersheds in Kendall County.

Figure 3-14: Major water bodies and watersheds in Kendall County



Section 4 - Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on sound risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much of the community could be affected by a disaster, and the impact on community assets. A risk assessment consists of three components—hazard identification, vulnerability analysis, and risk analysis.

4.1 Hazard Identification/Profile

4.1.1 Existing Plans

The plans identified in Table 1-3 did not contain a risk analysis. These local planning documents were reviewed to identify historical hazards and help identify risk. To facilitate the planning process, flood data for the Federal and State Government were used for the flood analysis.

4.1.2 National Hazard Records

4.1.2.1 National Climatic Data Center (NCDC) Records

To assist the planning team, historical storm event data was compiled from the National Climatic Data Center (NCDC). NCDC records are estimates of damage reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to given weather events.

The NCDC data included 202 reported events in Kendall County between May 27, 1954 and the October 31, 2009 (the most updated information as of the date of this plan). A summary table of events related to each hazard type is included in the hazard profile sections that follow. A full table listing all events, including additional details, is included as Appendix D. In addition to NCDC data, Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail were plotted using SPC recorded latitude and longitude. These events are plotted and included as Appendix E. The list of NCDC hazards is included in Table 4-1.

Table 4-1: Climatic Data Center Historical Hazards

Hazard
Tornadoes
Severe Thunderstorms
Drought/Extreme Heat
Winter Storms
Flood/Flash flood

4.1.2.2 FEMA Disaster Information

Since 1965 there have been 55 Federal Disaster Declarations for the state of Illinois. Emergency declarations allow states access to FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Kendall County has received federal aid for both PA and IA funding for seven declared disasters since 1965. Figure 4-1 depicts the disasters and emergencies that have been declared for Kendall County since 1965. Table 4-2 lists more specific information for each declaration that has occurred since 1965.

Figure 4-1: FEMA-Declared Emergencies and Disasters in Kendall County (1965-present)

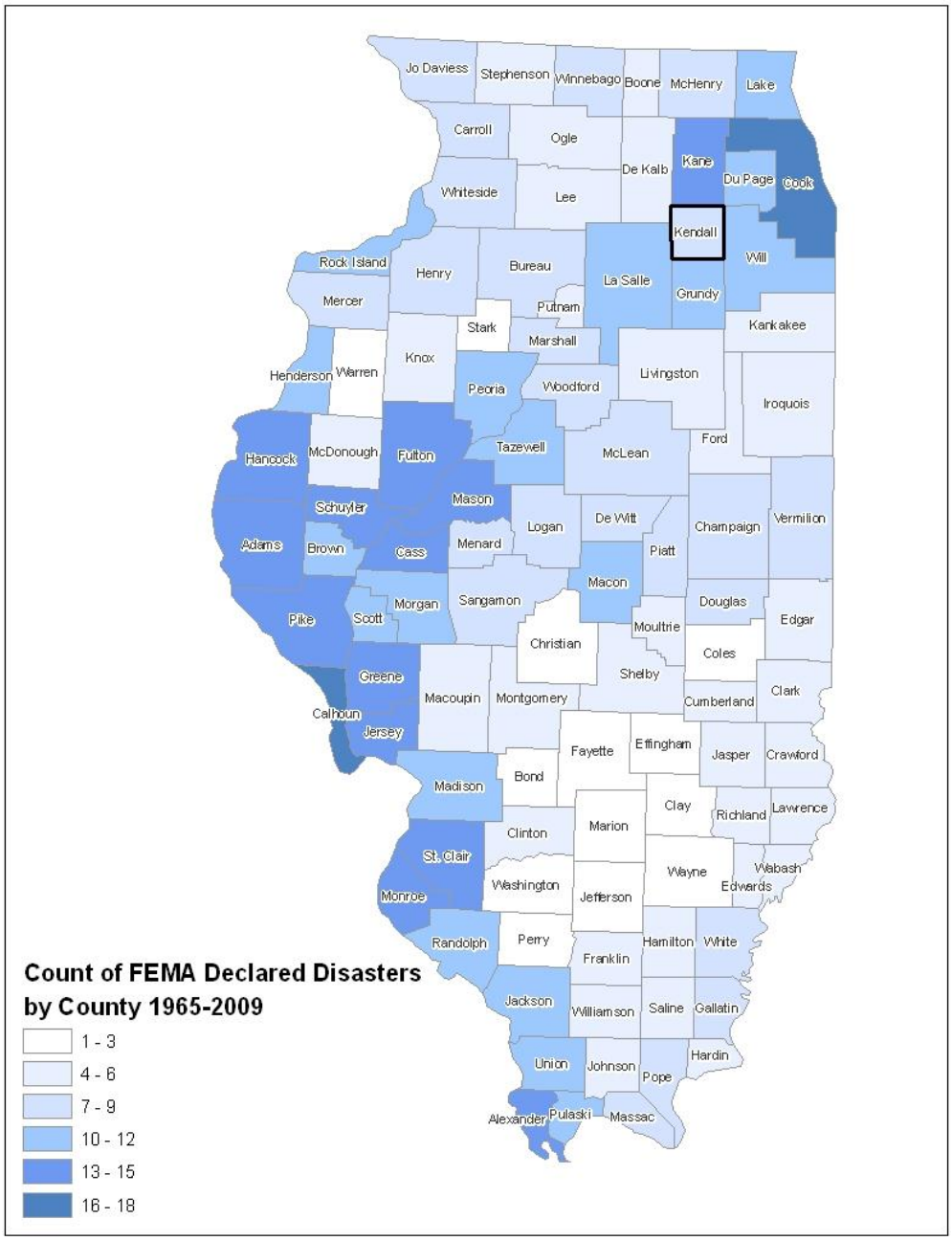


Table 4-2: FEMA-Declared Emergencies in Kendall County (1965-present)

Date of Incident	Date of Declaration	Declaration Number	Disaster Description	Type of Assistance
	April 27, 1973	373	Severe Storms and Flooding	
	June 10, 1974	438	Severe Storms and Flooding	
August 28, 1990	August 31,1990	878	Tornadoes	
July 17, 1996	July 18, 1996	1129	Severe Storms and Flooding	
January 1, 1999	January 8, 1999	3134	Winter Snow Storm	Public
Dec. 10-31, 2000	January 17, 2000	3161	Severe Winter Storm	Public
Nov. 30-Dec. 1, 2006	Dec. 29, 2006	1800	Snow	Public
Sept. 13-Oct. 5, 2008	Oct. 3, 2008	373	Severe Storms and Flooding	Public

4.1.3 Hazard Ranking Methodology

Based on planning team input, national datasets, and existing plans, Table 4-3 lists the hazards Kendall County will address in this multi-hazard mitigation plan. In addition, these hazards ranked the highest based on the Risk Priority Index discussed in section 4.1.4.

Table 4-3: Planning Team Hazard List

Hazard
Thunderstorms/ High Winds/Hail/ Lightning
Tornado
Transportation Hazardous Material Release
Flood
Winter Storms
Fire/ Explosion
Earthquakes

4.1.4 Calculating the Risk Priority Index

The first step in determining the Risk Priority Index (RPI) was to have the planning team members generate a list of hazards which have befallen or could potentially befall their community. Next, the planning team members were asked to assign a likelihood rating based on the criteria and methods described in the following table. Table 4-4 displays the probability of the future occurrence ranking. This ranking was based upon previous history and the definition of hazard. Using the definitions given, the likelihood of future events is "Quantified" which results in the classification within one of the four "Ranges" of likelihood.

Table 4-4: Future Occurrence Ranking

Probability	Characteristics
4 - *Highly Likely*	Event is probable within the calendar year. Event has up to 1 in 1 year chance of occurring. (1/1=100%) History of events is greater than 33% likely per year.
3 - *Likely*	Event is probable within the next three years. Event has up to 1 in 3 years chance of occurring. (1/3=33%) History of events is greater than 20% but less than or equal to 33% likely per year.
2 - *Possible*	Event is probable within the next five years. Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year.
1 - *Unlikely*	Event is possible within the next ten years. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is less than or equal to 10% likely per year.

Next, planning team members were asked to consider the potential magnitude/severity of the hazard according to the severity associated with past events of the hazard. Table 4-5 gives four classifications of magnitude/severity.

Table 4-5: Hazard Magnitude

Magnitude/Severity	Characteristics
8 - *Catastrophic*	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
4 - *Critical*	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.
2 - *Limited*	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.
1 - *Negligible*	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.

Finally, the RPI was calculated by multiplying the probability by the magnitude/severity of the hazard. Using these values, the planning team member where then asked to rank the hazards. Table 4-6 identifies the RPI and ranking for each hazard facing Kendall County.

Table 4-6: Kendall County Hazards (RPI)

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Thunderstorms/ High Winds/Hail/ Lightning	4 - Highly Likely	2 - Limited	8	1
Tornado	3 - Likely	2 - Limited	6	2
Transportation Hazardous Material Release	3 - Likely	2 - Limited	6	3
Flooding	4 - Highly Likely	1 - Negligible	4	4
Winter Storms	3 - Likely	1 - Negligible	3	5
Fire/ Explosion	2 - Possible	1 - Negligible	2	6
Earthquake	1 - Unlikely	2 - Limited	2	7

4.1.5 Jurisdictional Hazard Ranking

Because the jurisdictions in Kendall County differ in their susceptibilities to certain hazards—for example, The United City of Yorkville which is located on the Fox River floodplain is more likely to experience significant flooding than Lisbon or Joliet which are located on the uplands outside of any large stream's or river's floodplain which could potentially cause significant flooding—the hazards identified by the planning team were ranked by SIUC for each individual jurisdiction using the methodology outlined in Section 4.1.4. The SIUC rankings were based on input from the planning team members, available historical data, and the hazard modeling results described within this hazard mitigation plan. During the five-year review of the plan this table will be updated by the planning team to ensure these jurisdictional rankings accurately reflect each community's assessment of these hazards. Table 4-7 lists the jurisdictions and their respective hazard rankings (Ranking 1 being the highest concern).

Table 4-7: Hazard Rankings by Jurisdiction

Jurisdiction	Hazard						
	Tornado	HAZMAT	Earthquake	Thunderstorms	Flooding	Winter Storms	Fire/Explosion
City of Aurora*	2	3	7	1	6	4	5
Boulder Hill CDP*	2	3	7	1	4	5	6
City of Joliet*	2	3	7	1	6	4	5
Village of Lisbon*	2	3	7	1	6	4	5
Village of Millington*	2	3	7	1	4	5	6
Village of Minooka*	2	3	7	1	6	4	5
Village of Newark	2	3	7	1	4	5	6
Village of Oswego	2	3	7	1	4	5	6

Jurisdiction	Hazard						
	Tornado	HAZMAT	Earthquake	Thunderstorms	Flooding	Winter Storms	Fire/Explosion
City of Plano	1	4	7	3	2	6	5
City of Sandwich	2	3	7	1	4	5	6
The United City of Yorkville	1	3	7	2	4	5	6

* Hazard ranking was completed by SIUC for this jurisdiction

4.1.6 GIS and HAZUS-MH

The third step in this assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. Where possible, the hazards were quantified using GIS analyses and HAZUS-MH. This process reflects a Level 2 approach to analyzing hazards as defined for HAZUS-MH. The approach includes substitution of selected default data with local data. This process improved the accuracy of the model predictions.

HAZUS-MH generates a combination of site-specific and aggregated loss estimates depending upon the analysis options that are selected and the input that is provided by the user. Aggregate inventory loss estimates, which include building stock analysis, are based upon the assumption that building stock is evenly distributed across census blocks/tracts. Therefore, it is possible that overestimates of damage will occur in some areas while underestimates will occur in other areas. With this in mind, total losses tend to be more reliable over larger geographic areas than for individual census blocks/tracts. It is important to note that HAZUS-MH is not intended to be a substitute for detailed engineering studies. Rather, it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This documentation does not provide full details on the processes and procedures completed in the development of this project. It is only intended to highlight the major steps that were followed during the project.

Site-specific analysis is based upon loss estimations for individual structures. For flooding, analysis of site-specific structures takes into account the depth of water in relation to the structure. HAZUS-MH also takes into account the actual dollar exposure to the structure for the costs of building reconstruction, content, and inventory. However, damages are based upon the assumption that each structure will fall into a structural class, and structures in each class will respond in a similar fashion to a specific depth of flooding or ground shaking. Site-specific analysis is also based upon a point location rather than a polygon, therefore the model does not account for the percentage of a building that is inundated. These assumptions suggest that the loss estimates for site-specific structures as well as for aggregate structural losses need to be viewed as approximations of losses that are subject to considerable variability rather than as exact engineering estimates of losses to individual structures.

The following events were analyzed. The parameters for these scenarios were created through GIS, HAZUS-MH, and historical information to predict which communities would be at risk.

Using HAZUS-MH

1. 100-year overbank flooding
2. Earthquake scenarios

Using GIS

1. Tornado
2. Hazardous material release

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

4.2.1.1 Processes and Sources for Identifying Assets

The HAZUS-MH data is based on best available national data sources. The initial step involved updating the default HAZUS-MH data using State of Illinois data sources. At Meeting #1, the planning team members were provided with a plot and report of all HAZUS-MH critical facilities. The planning team took GIS data provided by SIUC-Polis; verified the datasets using local knowledge, and allowed SIUC-Polis to use their local GIS data for additional verification. SIUC GIS analysts made these updates and corrections to the HAZUS-MH data tables prior to performing the risk assessment. These changes to the HAZUS-MH inventory reflect a Level 2 analysis. This update process improved the accuracy of the model predictions.

The default HAZUS-MH data has been updated as follows:

- The HAZUS-MH defaults, critical facilities, and essential facilities have been updated based on the most recent available data sources. Critical and essential point facilities have been reviewed, revised, and approved by local subject matter experts at each county.
- The essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) have been applied to the HAZUS-MH model data. HAZUS-MH reports of essential facility losses reflect updated data.

Kendall County provided SIUC with parcel boundaries and county Assessor records. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary. Each parcel point was linked to an Assessor record based upon matching parcel numbers. The generated building inventory points represent the approximate locations (within a parcel) of building exposure. The parcel points were aggregated by census block.

- The aggregate building inventory tables used in this analysis have not been updated. Default HAZUS-MH model data was used for the earthquake.
- For the flood analysis, user-defined facilities were updated from the building inventory information provided by Kendall County.

Parcel-matching results for Kendall County are listed in Table 4-8.

Table 4-8: Parcel-Matching for Kendall County

Data Source	Count
Assessor Records	53,498
County-Provided Parcels	53,498
Assessor Records with Improvements	40,234
Matched Parcel Points	40,234

The following assumptions were made during the analysis:

- The building exposure for flooding, tornado, and HAZMAT is determined from the Assessor records. It is assumed that the population and the buildings are located at the centroid of the parcel.
- The building exposure for earthquake used HAZUS-MH default data.
- The algorithm used to match county-provided parcel point locations with the Assessor records is not perfect. The results in this analysis reflect matched parcel records only. The parcel-matching results for Kendall County are included in Table 4-8.
- Population counts are based upon 2.5 persons per household. Only residential occupancy classes are used to determine the impact on the local population. If the event were to occur at night, it would be assumed that people are at home (not school, work, or church).
- The analysis is restricted to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.

4.2.1.2 Essential Facilities List

Table 4-9 identifies the essential facilities that were added or updated for the analysis. Essential facilities are a subset of critical facilities. A map and list of all critical facilities is included as Appendix F.

Table 4-9: Essential Facilities List

Facility	Number of Facilities
Care Facilities	2
Emergency Operations Centers	1
Fire Stations	13
Police Stations	7
Schools	45

4.2.1.3 Facility Replacement Costs

Facility replacement costs and total building exposure are identified in Table 4-10. The replacement costs have not been updated by local data. Table 4-10 also includes the estimated number of buildings within each occupancy class.

Table 4-10: Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure (X 1000)
Agricultural	186	$32,461
Commercial	1,136	$610,725
Education	45	$34,942
Government	21	$15,967
Industrial	477	$239,889
Religious/Non-Profit	67	$47,585
Residential	20,646	$3,622,430
Total	**22,563**	**$4,603,999**

4.3 Future Development

As the county's population continues to grow, the residential and urban areas will extend further into the county, placing more pressure on existing transportation and utility infrastructure while increasing the rate of farmland conversion; Kendall County will address specific mitigation strategies in Section 5 to alleviate such issues.

Because Kendall County is vulnerable to a variety of natural and technological threats, the county government—in partnership with state government—must make a commitment to prepare for the management of these types of events. Kendall County is committed to ensuring that county elected and appointed officials become informed leaders regarding community hazards so that they are better prepared to set and direct policies for emergency management and county response.

4.4 Hazard Profiles

4.4.1 Tornado Hazard

Hazard Definition for Tornado Hazard

Tornadoes pose a great risk to Illinois and its citizens. Tornadoes can occur at any time during the day or night. They can also happen during any month of the year. The unpredictability of tornadoes makes them one of the state's most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum velocity at about 300 miles per hour, but higher and lower values can occur. A wind velocity of 200 miles per hour will result in a wind pressure of 102.4 pounds per square foot of surface area—a load that exceeds the tolerance limits of most buildings. Considering these factors, it is easy to understand why tornadoes can be so devastating for the communities they hit.

Tornadoes are defined as violently-rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently-rotating column of air can reach the ground very quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are classified according to the Fujita tornado intensity scale. The tornado scale ranges from low intensity F0 with effective wind speeds of 40 to 70 miles per hour to F5 tornadoes with effective wind speeds of over 260 miles per hour. The Fujita intensity scale is described in Table 4-11.

Table 4-11: Fujita Tornado Rating

Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 *Gale*	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, sign boards damaged, shallow-rooted trees blown over.
1 *Moderate*	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
2 *Significant*	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 *Severe*	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 *Devastating*	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
5 *Incredible*	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Source: NOAA Storm Prediction Center

Previous Occurrences for Tornado Hazard

There have been several occurrences of tornadoes within Kendall County during the past few decades. The NCDC database reported 14 tornadoes/funnel clouds in Kendall County since 1954. The most recent recorded event occurred on July 27, 2003, during a chain of thunderstorms. The tornado touched down near the Hideaway Lake Camp near Yorkville, Illinois.

Kendall County NCDC recorded tornadoes are identified in Table 4-12. Additional details for NCDC events are included in Appendix D.

Table 4-12: Kendall County Tornadoes*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Kendall County	5/27/1954	Tornado	F2	0	0	25K	0
Kendall County	9/26/1959	Tornado	F1	0	0	25K	0
Kendall County	4/6/1972	Tornado	F1	0	0	25K	0
Kendall County	3/12/1976	Tornado	F3	0	0	2.5M	0
Kendall County	6/30/1977	Tornado	F	0	0	0	0
Kendall County	6/30/1977	Tornado	F	0	0	0	0
Kendall County	4/27/1984	Tornado	F3	0	0	2.5M	0
Kendall County	6/5/1989	Tornado	F0	0	0	0	0
Kendall County	8/28/1990	Tornado	F5	0	0	2.5M	0
Lisbon	8/5/1995	Funnel Cloud	N/A	0	0	0	0
Bristol	5/28/2003	Tornado	F0	0	0	0	0
Millington	5/30/2003	Tornado	F0	0	0	0	0
Millington	5/30/2003	Tornado	F0	0	0	0	0
Yorkville	7/27/2003	Tornado	F0	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Tornado Hazard

The entire county has the same risk for occurrence of tornadoes. They can occur at any location within the county.

Hazard Extent for Tornado Hazard

The historical tornadoes generally moved from southwest to northeast across the county. The extent of the hazard varies both in terms of the extent of the path and the wind speed.

Risk Identification for Tornado Hazard

Based on historical information, the occurrence of future tornadoes in Kendall County is likely. Tornadoes with varying magnitudes are expected to happen. According to the RPI, tornadoes ranked as the number two hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	2	=	**6**

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Kendall County are discussed in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to tornadoes. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts will vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

The building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g. damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a tornado the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a tornado. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g. loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

An example scenario is described as follows to gauge the anticipated impacts of tornadoes in the county, in terms of numbers and types of buildings and infrastructure.

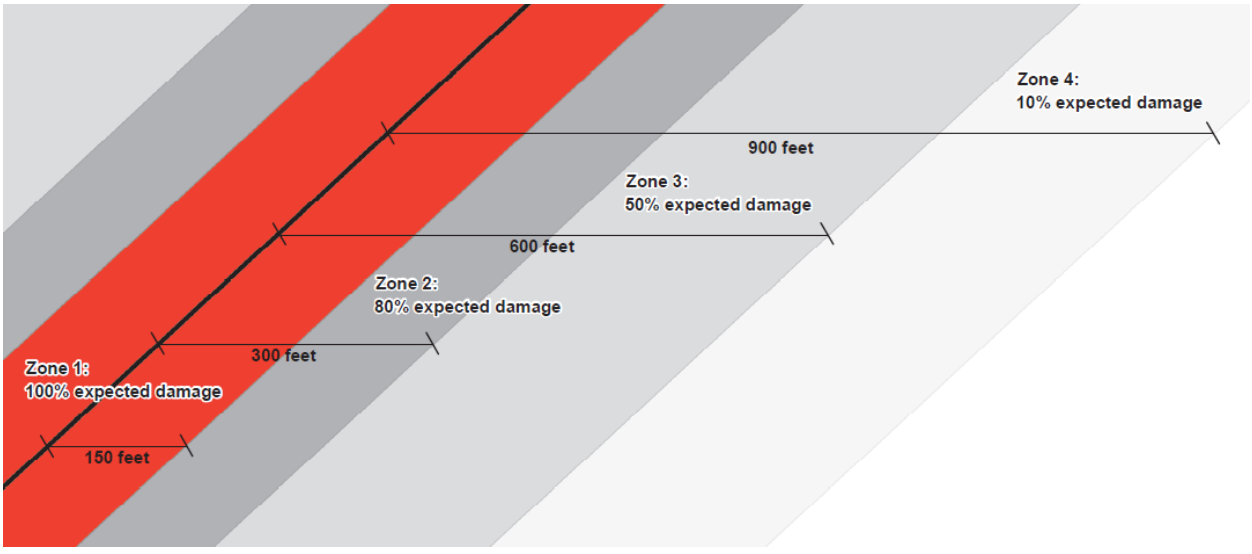
GIS overlay modeling was used to determine the potential impacts of an F4 tornado. The analysis used a hypothetical path based upon the F4 tornado event that ran for 18 miles southwest to northeast across the County impact portions of The United City of Yorkville and the Village of Oswego. The selected widths were modeled after a recreation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these six categories. Table 4-13 depicts tornado damage curves as well as path widths.

Table 4-13: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path with decreasing amounts of damage away from the center. After the hypothetical path is digitized on a map the process is modeled in GIS by adding buffers (damage zones) around the tornado path. Figure 4-2 and Table 4-14 describe the zone analysis. The selected hypothetical tornado path is depicted in Figure 4-3, and the damage curve buffers are shown in Figure 4-4.

Figure 4-2: F4 Tornado Analysis Using GIS Buffers



An F4 tornado has four damage zones, depicted in Table 4-10. Total devastation is estimated within 150 feet of the tornado path. The outer buffer is 900 feet from the tornado path, within which buildings will experience 10% damage.

Table 4-14: F4 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-3: Hypothetical F4 Tornado Path in Kendall County

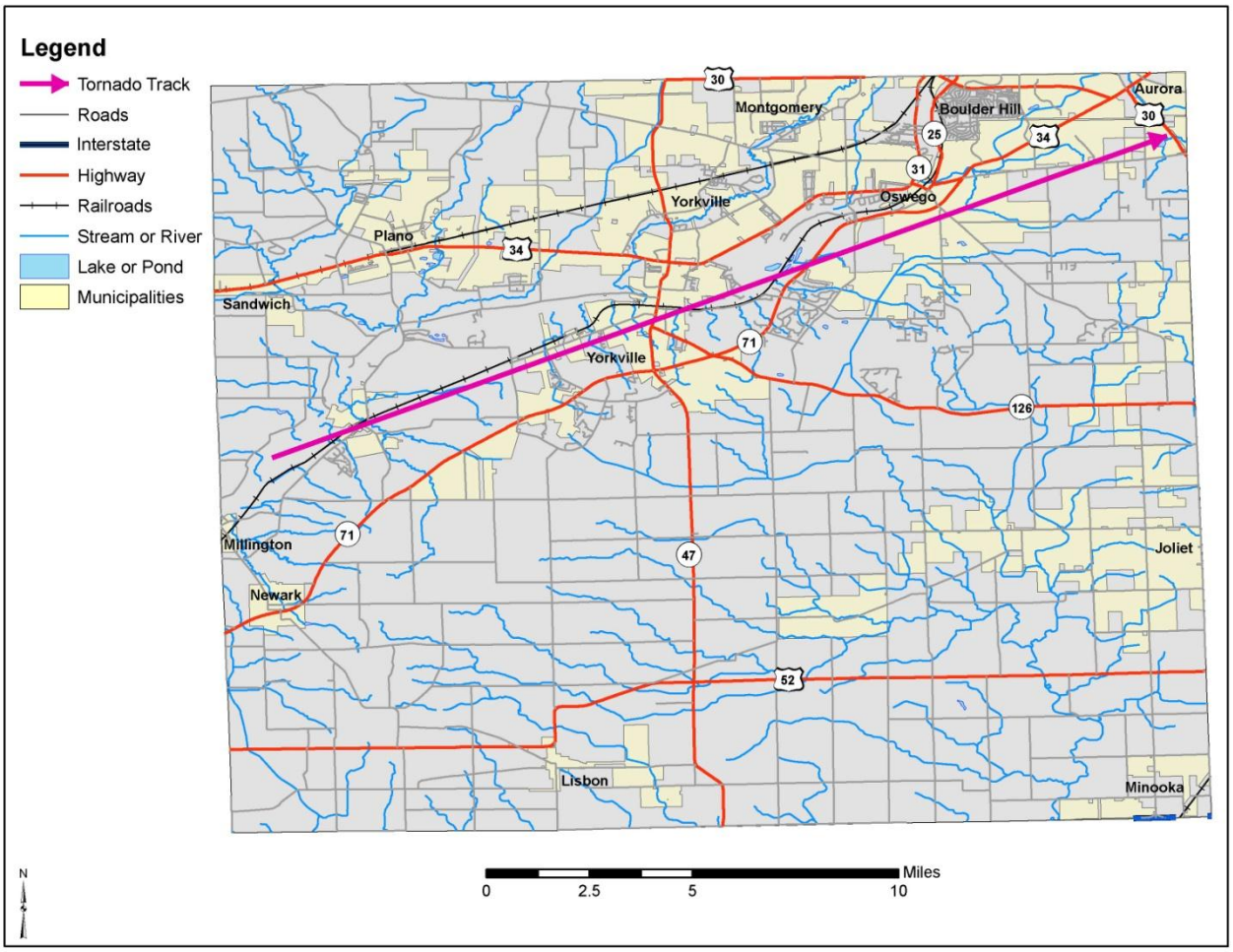
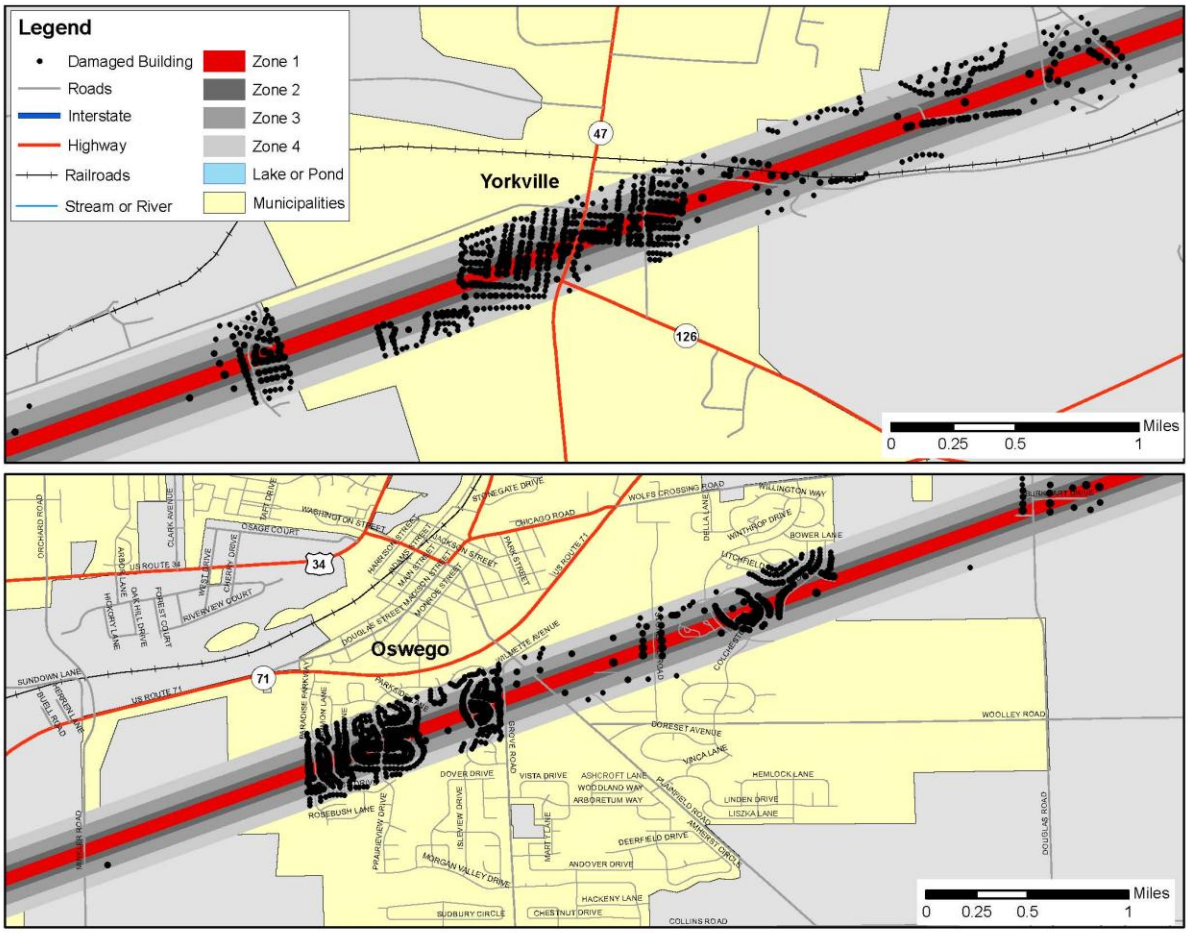


Figure 4-4: Modeled F4 Tornado Damage Buffers in Kendall County



The results of the analysis are depicted in Tables 4-15 and 4-16. The GIS analysis estimates that 1,560 buildings will be damaged. The estimated building losses were $140.4 million. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. The overlay was performed against parcels provided by Kendall County that were joined with Assessor records showing property improvement.

The Assessor records often do not distinguish parcels by occupancy class if the parcels are not taxable. For purposes of analysis, the total number of buildings and the building replacement costs for government, religious/non-profit, and education should be lumped together.

Table 4-15: Estimated Numbers of Buildings Damaged by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	250	244	462	485
Commercial	7	1	19	19
Industrial	3	3	3	3
Agriculture	2	6	4	4
Religious/Nonprofit	0	0	0	0
Government	8	6	15	9
Education	0	2	1	4
Total	**270**	**262**	**504**	**524**

Table 4-16: Estimated Building Losses by Occupancy Type (X 1000)

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$44,993,622	$34,226,789	$42,899,607	$9,269,148
Commercial	$913,707	$103,632	$1,188,435	$215,663
Industrial	$398,091	$830,357	$275,624	$44,399
Agriculture	$151,968	$685,862	$341,763	$84,955
Religious/Nonprofit	$0	$0	$0	$0
Government	$0	$0	$0	$0
Education	$0	$2,400,000	$750,000	$600,000
Total	**$46,457,388**	**$38,246,640**	**$45,455,429**	**$10,214,165**

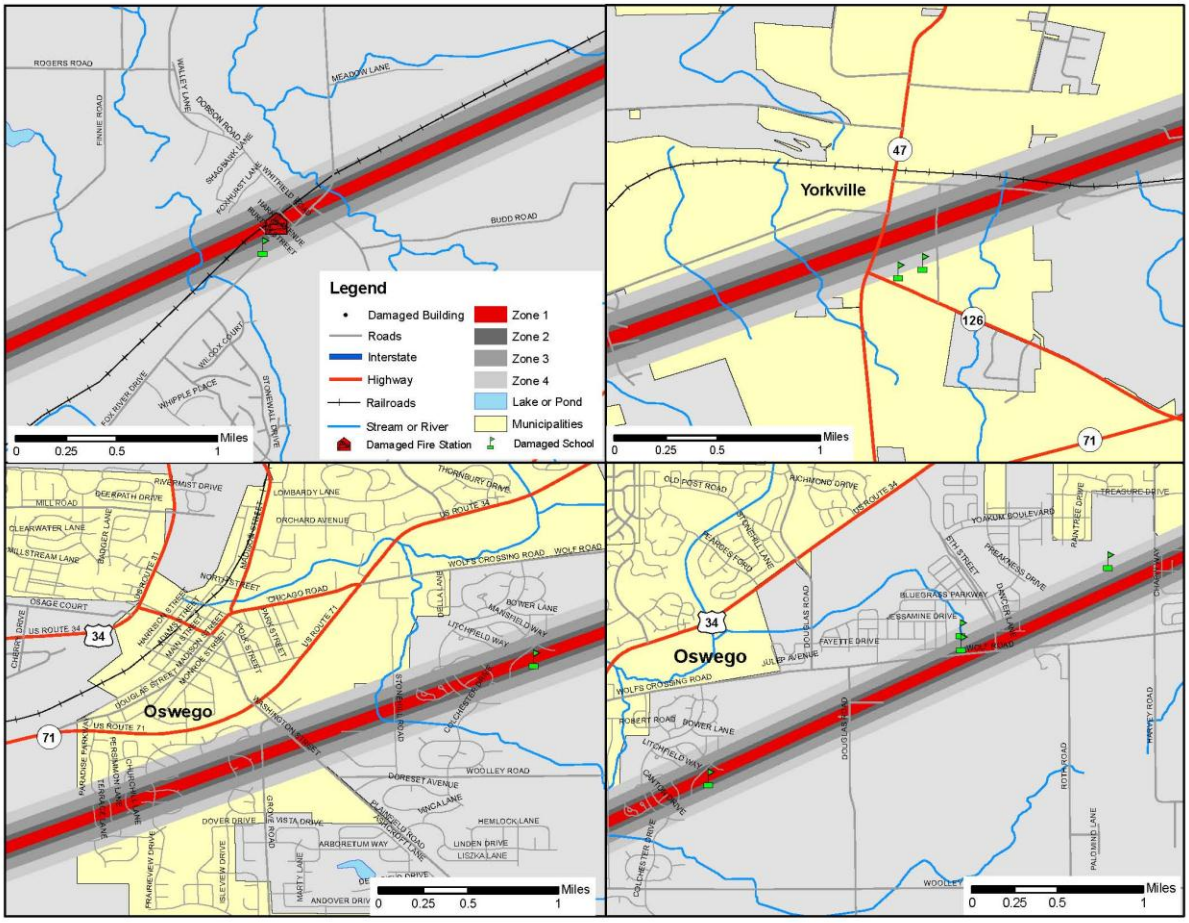
Critical Facilities Damage

There are 36 critical facilities located within 900 feet of the hypothetical tornado path. The affected facilities are identified in Table 4-17, and their geographic locations are shown in Figures 4-5.

Table 4-17: Estimated Essential Facilities Affected

Name
Fire Stations
Little Rock Fire Station #2
School Facilities
Churchill Elementary School
Millbrook Junior High School
Oswego East High School
Circle Center Grade School
Yorkville Intermediate School
Southbury Elementary School
Karl Plank Junior High School

Figure 4-5: Essential Facilities within Tornado Path in Kendall County



vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and buildings have been identified as at risk because tornadoes can occur anywhere within the state, at any time of the day, and during any month of the year. Furthermore, any future development in terms of new construction within the county will be at risk. The building exposure for Kendall County is included in Table 4-10.

All critical facilities in the county and communities within the county are at risk. A map and list of all critical facilities is included as Appendix F.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warnings of approaching storms are also vital to preventing the loss of property and ensuring the safety of Kendall County residents.

4.4.2 Flood Hazard

Hazard Definition for Flooding

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods can be classified as one of two types: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause damage over relatively localized areas, but they can be quite severe in the local areas in which they occur. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Hazard Definition for Dam and Levee Failure

Dams are structures that retain or detain water behind a large barrier. When full or partially full, the difference in elevation between the water above the dam and below creates large amounts of potential energy, creating the potential for failure. The same potential exists for levees when they serve their purpose, which is to confine flood waters within the channel area of a river and exclude that water from land or communities land-ward of the levee. Dams and levees can fail due to either 1) water heights or flows above the capacity for which the structure was designed; or 2) deficiencies in the structure such that it cannot hold back the potential energy of the water. If a dam or levee fails, issues of primary concern include loss of human life/injury, downstream property damage, lifeline disruption (of concern would be transportation routes and utility lines required to maintain or protect life), and environmental damage.

Many communities view both dams and levees as permanent and infinitely safe structures. This sense of security may well be false, leading to significantly increased risks. Both downstream of dams and on floodplains protected by levees, security leads to new construction, added

infrastructure, and increased population over time. Levees in particular are built to hold back flood waters only up to some maximum level, often the 100-year (1% annual probability) flood event. When that maximum is exceeded by more than the design safety margin, the levee will be overtopped or otherwise fail, inundating communities in the land previously protected by that levee. It has been suggested that climate change, land-use shifts, and some forms of river engineering may be increasing the magnitude of large floods and the frequency of levee failure situations.

In addition to failure that results from extreme floods above the design capacity, levees and dams can fail due to structural deficiencies. Both dams and levees require constant monitoring and regular maintenance to assure their integrity. Many structures across the U.S. have been under-funded or otherwise neglected, leading to an eventual day of reckoning in the form either of realization that the structure is unsafe or, sometimes, an actual failure. The threat of dam or levee failure may require substantial commitment of time, personnel, and resources. Since dams and levees deteriorate with age, minor issues become larger compounding problems, and the risk of failure increases.

Previous Occurrences for Flooding

The NCDC database reported 17 flood events in Kendall County since 1996. One of the most recent significant events occurred during September 2008. The remnants of hurricane Ike moved across northern Illinois producing the second round of heavy rain in a 24 hour period. The heavy rain amounted to 6 to 11 inches across northern Illinois caused extensive and widespread flooding. Total property damage from this event was estimated at $2 million.

Kendall County NCDC recorded floods are identified in Table 4-18. Additional details for NCDC events are included in Appendix D.

Table 4-18: Kendall County Previous Occurrences of Flooding*

Location or County	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Kendall County	7/17/1996	Flash Flood	0	0	1.5M	0
Northern Illinois	2/20/1997	Flood	1	0	0	0
Kendall County	7/10/2000	Flash Flood	0	0	0	0
Plano	7/27/2003	Flash Flood	0	0	0	0
Central	5/13/2004	Flash Flood	0	0	0	0
Yorkville	5/30/2004	Flash Flood	0	0	0	0
Plano	6/12/2004	Flash Flood	0	0	0	0
Northern Illinois	1/13/2005	Flood	0	0	0	0
Yorkville	10/2/2006	Flood	0	0	0	0
Oswego	3/1/2007	Flood	0	0	0	0
Oswego	3/1/2007	Flood	0	0	0	0
Oswego	3/31/2007	Flood	0	0	0	0
Oswego	7/18/2007	Flood	0	0	0	0
Yorkville	8/23/2007	Flood	0	0	0	0
Little Rock	9/14/2008	Flash Flood	0	0	2.0M	0
Little Rock	9/14/2008	Flood	0	0	0	0
Oswego	12/27/2008	Flash Flood	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Previous Occurrences for Dam and Levee Failure

According to the Kendall County planning team, there are no records or local knowledge of any dam or certified levee failure in the county.

Repetitive Loss Properties

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP, which has suffered flood loss damage on two occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is 25% of the market value of the structure at the time of each flood loss.

The Illinois Emergency Management Agency (IEMA) was contacted to determine the location of repetitive loss structures. Table 4-19 lists 2009 data for damages to these repetitive loss structures.

Table 4-19: Kendall County Repetitive Loss Structures

Jurisdiction	Occupancy Type	Number of Structures	Number of Losses
Kendall County	Single Family	9	21
Kendall County	Other Residence	1	5
City of Joliet	Single Family	16	37
City of Plano	Non Residential	2	7
The United City of Yorkville	Other Residential	1	2
Village of Millington	Single Family	1	2
Village of Plainfield	Single Family	2	4

Geographic Location for Flooding

Most river flooding occurs in early spring and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Severe thunderstorms may cause flooding during the summer or fall, but tend to be localized. The primary source of river flooding in Kendall County is the Wabash River.

Flash floods, brief heavy flows in small streams or normally dry creek beds, also occur within the county. Flash flooding is typically characterized by high-velocity water, often carrying large amounts of debris. Urban flooding involves the overflow of storm drain systems and is typically the result of inadequate drainage following heavy rainfall or rapid snowmelt.

DFIRM was used to identify specific stream reaches for analysis. The areas of riverine flooding are depicted on the map in Appendix E.

The National Oceanic and Atmospheric Administration (NOAA) Advanced Hydrologic Prediction Service provides information from gauge locations at points along various rivers

across the United States. For Kendall County, one gage is located on the Fox River at Montgomery. Historic flood levels for this gage are provided in Appendix F.

Geographic Location for Dam and Levee Failure

HAZUS-MH identified three dams in Kendall County. The maps in Appendix F illustrate the locations of Kendall County dams. All three of these dams are low hazard dams (L) and they do not have an Emergency Action Plan (EAP). Table 4-20 summarizes the dam information.

Table 4-20: National Inventory of Dams

Dam Name	River	Hazard	EAP
Milhurst Lake Dam	Tributary to the Fox River	L	No
Yorkville Dam	Fox River	L	No
Black Berry Creek Dam	Black Berry Creek	L	No

A review of the United States Army Corps of Engineers and local records revealed no certified levees within Kendall County.

* The dams and levees listed in this multi-hazard mitigation plan are recorded from default HAZUS-MH data. Their physical presences were not confirmed; therefore, new or unrecorded structures may exist. A more complete list of locations is included in Appendix F.

Hazard Extent for Flooding

The HAZUS-MH flood model is designed to generate a flood depth grid and flood boundary polygon by deriving hydrologic and hydraulic information based on user-provided elevation data or by incorporating selected output from other flood models. HAZUS-MH also has the ability to clip a Digital Elevation Model (DEM) with a user-provided flood boundary, thus creating a flood depth grid. For Kendall County, HAZUS-MH was used to extract flood depth by clipping the DEM with the DFIRMs Base Flood Elevation (BFE) boundary. The BFE is defined as the area that has a 1% chance of flooding in any given year. Planning team input and a review of historical information provided additional information on specific flood events.

Hazard Extent for Dam and Levee Failure

When dams are assigned the low (L) hazard potential classification, it means that failure or incorrect operation of the dam will result in no human life losses and no economic or environmental losses. Losses are principally limited to the owner's property. Dams assigned the significant (S) hazard classification are those dams in which failure or incorrect operation results in no probable loss of human life; however it can cause economic loss, environment damage, and disruption of lifeline facilities. Dams classified as significant hazard potential dams are often located in predominantly rural or agricultural areas, but could be located in populated areas with a significant amount of infrastructure. Dams assigned the high (H) hazard potential classification are those dams in which failure or incorrect operation has the highest risk to cause loss of human life and significant damage to buildings and infrastructure.

According to default HAZUS-MH data, the three dams in Kendall County are low hazard and do not have Emergency Action Plans (EAP). An EAP is not required by the State of Illinois but is strongly recommended by the Illinois Department of Natural Resources.

Accurate mapping of the risks of flooding behind levees depends on knowing the condition and level of protection the levees actually provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps clearly reflect the flood protection capabilities of levees, and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners—usually states, communities, or in some cases private individuals or organizations—are responsible for ensuring that the levees they own are maintained according to their design. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the one-percent-annual chance flood.

Risk Identification for Flood Hazard

Based on historical information and the HAZUS-MH flooding analysis results, future occurrence of flooding in Kendall County is highly likely. According to the Risk Priority Index (RPI), flooding is ranked as the number four hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	**1**	=	**4**

Risk Identification for Dam/Levee Failure

Based on operation and maintenance requirements and local knowledge of the dams in Kendall County, the occurrence of a dam or levee failure is unlikely. However, if a high hazard dam were to fail, the magnitude and severity of the damage could be great. The warning time and duration of the dam failure event would be very short. Based on input from the planning team, the risk of dam and levee failure is insignificant, and dam and levee failure was not ranked as a risk.

HAZUS-MH Analysis Using 100-Year Flood Boundary and County Parcels

HAZUS-MH generated the flood depth grid for a 100-year return period by clipping the USGS 1/3 Arc-second (approximately 10-meter raster cell size) Digital Elevation Model (DEM) to the Kendall County flood boundary. Next, HAZUS-MH utilized a user-defined analysis of Kendall County with site-specific parcel data provided by the county.

HAZUS-MH estimates the 100-year flood would damage 439 buildings with building related flood losses totaling approximately $32.1 million. The total estimated numbers of damaged buildings are given in Table 4-21. Figure 4-6 depicts the Kendall County parcel points that fall within the 100-year floodplain. Figure 4-7 highlights damaged buildings within the floodplain areas in urban areas.

Table 4-21: Kendall County HAZUS-MH Building Damage

General Occupancy	Number of Buildings Damaged	Total Building Damage (x1000)
Residential	247	$19,751,262
Commercial	17	$1,513,378
Industrial	0	$0
Agricultural	71	$10,830,106
Government \ Non-Profit	104	$0
Education	0	$0
Total	**439**	**$32,094,746**

Figure 4-6: Kendall County Buildings in Floodplain (100-Year Flood)

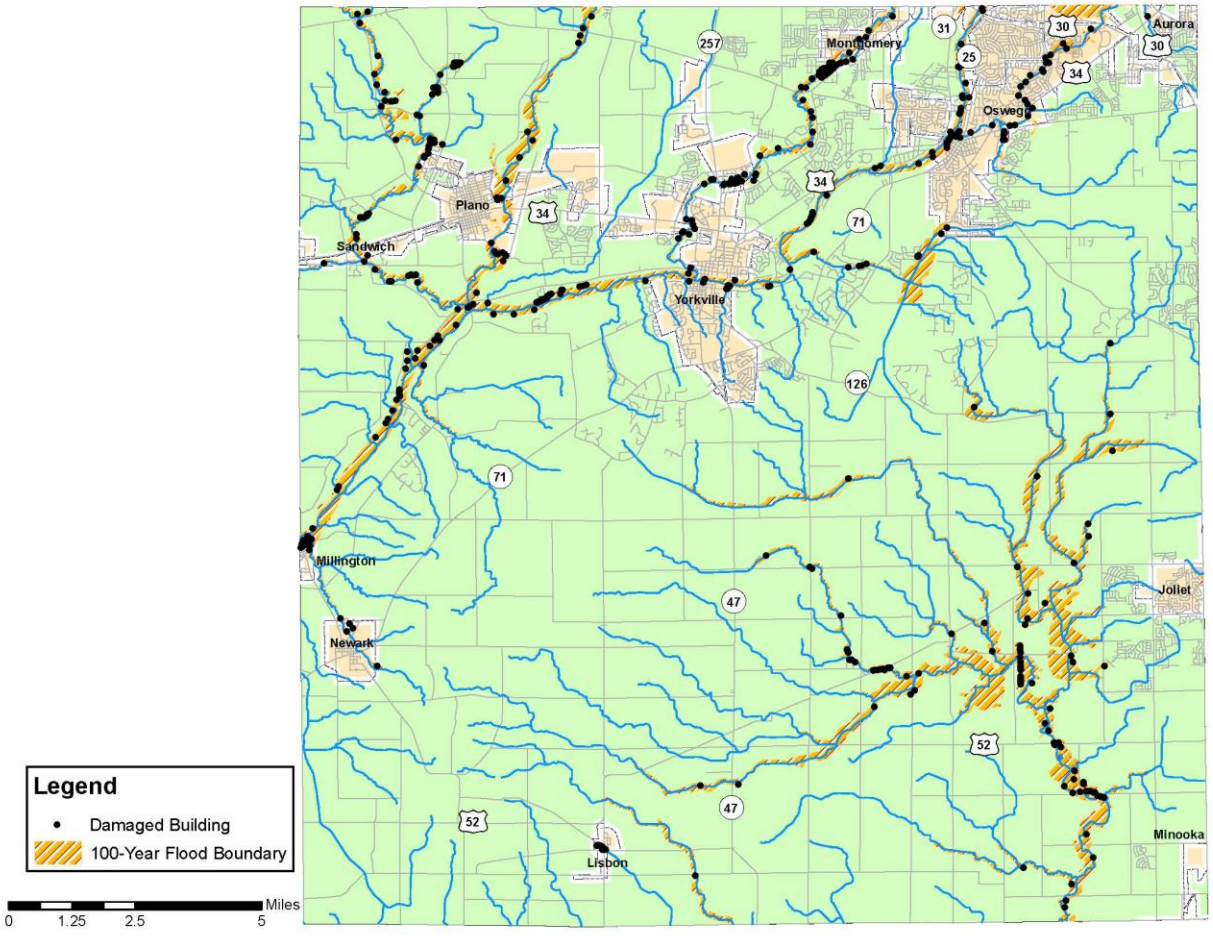
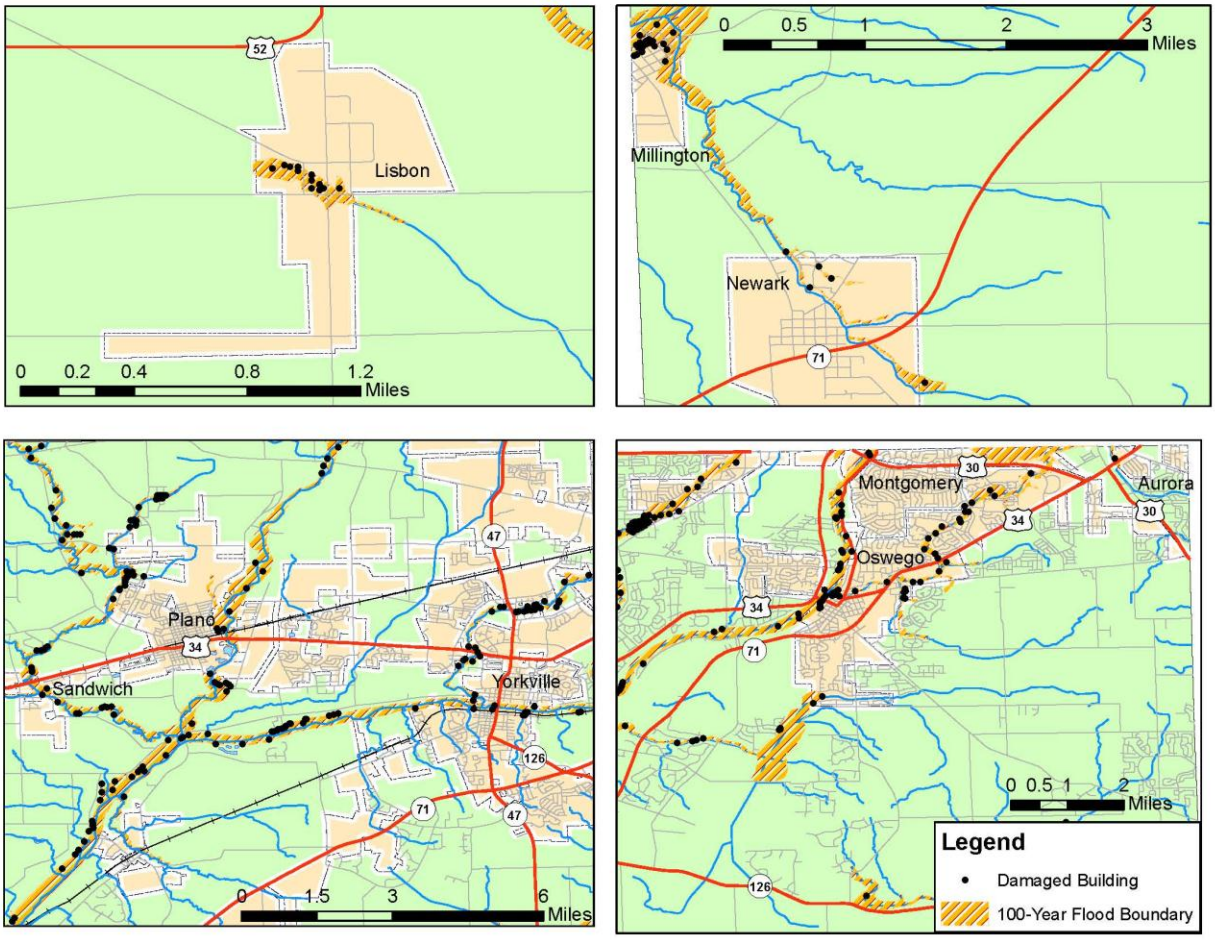


Figure 4-7: Kendall County Flood-Prone Urban Areas (100-Year Flood)

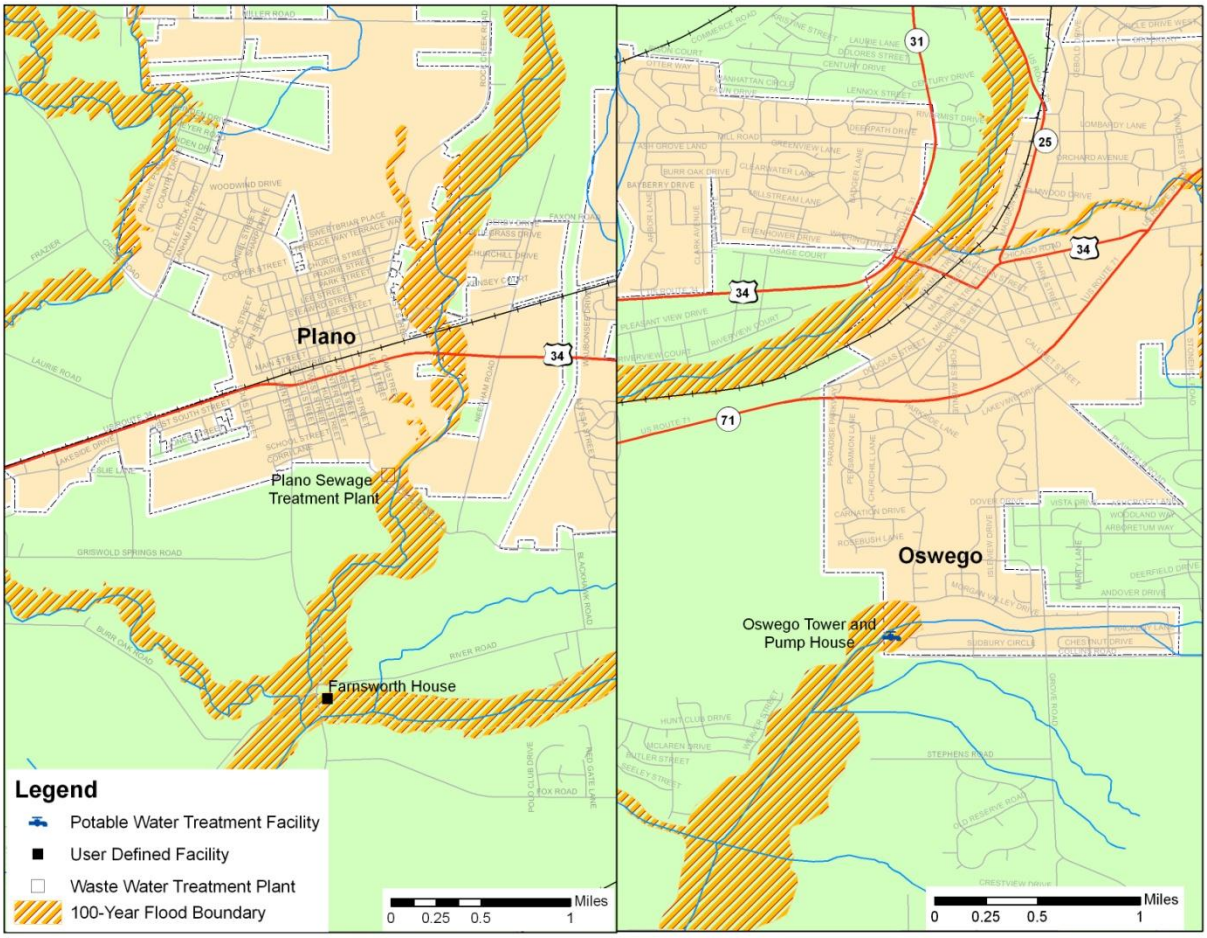


Critical Facilities

A critical facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). A map and list of all critical facilities is included as Appendix F.

The analysis identified Plano Sewage Treatment Plant, the Oswego Pump House, and the Farnsworth House as the only critical facilities subject to flooding. Figure 4-8 shows the location of these three critical facilities.

Figure 4-8: Boundary of 100-Year Flood Overlaid with Critical Facilities



Infrastructure

The types of infrastructure that could be impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that any number of these items could become damaged in the event of a flood. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing traffic risks.

Vulnerability Analysis for Flash Flooding

Flash flooding could affect any low lying location within this jurisdiction; therefore, a significant portion of county's population and buildings are vulnerable to a flash flood. These structures can expect the same impacts as discussed in a riverine flood. A map and list of all critical facilities is included as Appendix F.

Vulnerability Analysis for Dam and Levee Failure

An EAP is required to assess the effect of dam failure on these communities. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the "one-percent-annual chance" flood.

Vulnerability to Future Assets/Infrastructure for Flooding

Flash flooding may affect any low lying or poorly drained location within the county; therefore many buildings and infrastructure are vulnerable to flash flooding. Currently, the Kendall County Planning, Building, and Zoning Department reviews new development within the unincorporated parts of the County for compliance with the County's Zoning ordinances. At this time no construction is planned within the area of the 100-year floodplain. Therefore, there is no new construction which will be vulnerable to a 100-year flood.

Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure

The Kendall County Planning, Building, and Zoning Department reviews new development within the unincorporated parts of the County for compliance with the County's Zoning ordinances.

Analysis of Community Development Trends

Controlling floodplain development is the key to reducing flood-related damages. Areas with recent development within the county may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible. Damage to these can cause the back up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.4.3 Earthquake Hazard

Hazard Definition for Earthquake Hazard

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped Earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake.

Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates, as is the case for seismic zones in the Midwestern United States. The most seismically active area in the Midwest is the New Madrid Seismic Zone. Scientists have learned that the New Madrid fault system may not be the only fault system in the Central U.S. capable of producing damaging earthquakes. The Wabash Valley fault system in Illinois and Indiana shows evidence of large earthquakes in its geologic history, and there may be other, as yet unidentified, faults that could produce strong earthquakes.

Ground shaking from strong earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area it may cause deaths, injuries, and extensive property damage.

The possibility of the occurrence of a catastrophic earthquake in the central and eastern United States is real as evidenced by history and described throughout this section. The impacts of significant earthquakes affect large areas, terminating public services and systems needed to aid the suffering and displaced. These impaired systems are interrelated in the hardest struck zones. Power lines, water and sanitary lines, and public communication may be lost; and highways, railways, rivers, and ports may not allow transportation to the affected region. Furthermore, essential facilities, such as fire and police departments and hospitals, may be disrupted if not previously improved to resist earthquakes.

As with hurricanes, mass relocation may be necessary, but the residents who are suffering from the earthquake can neither leave the heavily impacted areas nor receive aid or even communication in the aftermath of a significant event.

Magnitude, which is determined from measurements on seismographs, measures the energy released at the source of the earthquake. Intensity measures the strength of shaking produced by the earthquake at a certain location and is determined from effects on people, human structures, and the natural environment. Earthquake magnitudes and their corresponding intensities are listed in Tables 4-22 and 4-23.

Source: http://earthquake.usgs.gov/learning/topics/mag_vs_int.php

Table 4-22: Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Table 4-23: Earthquake Magnitude vs. Modified Mercalli Intensity Scale

Earthquake Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 - 3.0	I
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - IX
7.0 and higher	VIII or higher

Previous Occurrences for Earthquake Hazard

Numerous instrumentally measured earthquakes have occurred in Illinois. In the past few decades, with many precise seismographs positioned across Illinois, measured earthquakes have varied in magnitude from very low microseismic events of M=1–3 to larger events up to M=5.4. Microseismic events are usually only detectable by seismographs and rarely felt by anyone. The most recent earthquake in northern Illinois—as of the date of this report—occurred on February 10, 2010 at 3:59:35 local time about 3.0 km (2 miles) east-northeast of Virgil, IL and measured 3.8 in magnitude.

The consensus of opinion among seismologists working in the Midwest is that a magnitude 5.0 to 5.5 event could occur virtually anywhere at any time throughout the region. Earthquakes occur in Illinois all the time, although damaging quakes are very infrequent. Illinois earthquakes causing minor damage occur on average every 20 years, although the actual timing is extremely variable. Most recently, a magnitude 5.2 earthquake shook southeastern Illinois on April 18,

2008, causing minor damage in the Mt Carmel, IL area. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years mainly in Southern Illinois.

Seismic activity on the New Madrid Seismic Zone of southeastern Missouri is very significant both historically and at present. On December 16, 1811 and January 23 and February 7 of 1812, three earthquakes struck the central U.S. with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment *(sand blows)* over an area of >10,500 km^2, and uplift of a 50 km by 23 km zone (the Lake County uplift). The shaking collapsed scaffolding on the Capitol in Washington, D.C., and was felt over a total area of over 10 million km^2 (the largest felt area of any historical earthquake). Of all the historical earthquakes that have struck the U.S., an 1811-style event would do the most damage if it recurred today.

The New Madrid earthquakes are especially noteworthy because the seismic zone is in the center of the North American Plate. Such intraplate earthquakes are felt, and do damage, over much broader areas than comparable earthquakes at plate boundaries. The precise driving force responsible for activity on the New Madrid seismic zone is not known, but most scientists infer that it is compression transmitted across the North American Plate. That compression is focused on New Madrid because it is the site of a Paleozoic structure—the Reelfoot Rift—which is a zone of weakness in the crust.

The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811–1812 type earthquakes (magnitude 7.5–8.0) is 7%–10% over the next 50 years (*USGS Fact Sheet 2006-3125*.) Frequent large earthquakes on the New Madrid seismic zone are geologically puzzling because the region shows relatively little deformation. Three explanations have been proposed: 1) recent seismological and geodetic activity is still a short-term response to the 1811–12 earthquakes; 2) activity is irregular or cyclic; or 3) activity began only in the recent geologic past. There is some dispute over how often earthquakes like the 1811–12 sequence occur. Many researchers estimate a recurrence interval of between 550 and 1100 years; other researchers suggest that either the magnitude of the 1811–12 earthquakes have been over-stated, or else the actual frequency of these events is less. It is fair to say, however, that even if the 1811–12 shocks were just magnitude ~7 events, they nonetheless caused widespread damage and would do the same if another such earthquake or earthquake sequence were to strike today.

[Above: New Madrid earthquakes and seismic zone modified from N. Pinter, 1993, Exercises in Active Tectonic history adapted from *Earthquake Information Bulletin*, 4(3), May-June 1972. *http://earthquake.usgs.gov/regional/states/illinois/history.php*]

The earliest reported earthquake in Illinois was in **1795**. This event was felt at Kaskaskia, IL for a minute and a half and was also felt in Kentucky. At Kaskaskia, subterranean noises were heard. Due to the sparse frontier population, an accurate location is not possible, and the shock may have actually originated outside the state.

An intensity VI-VII earthquake occurred on **April 12, 1883**, awakening several people in Cairo, IL. One old frame house was significantly damaged, resulting in minor injuries to the inhabitants. This is the only record of injury in the state due to earthquakes.

On **October 31, 1895** a large M6.8 occurred at Charleston, Missouri, just south of Cairo. Strong shaking caused eruptions of sand and water at many places along a line roughly 30 km (20 mi) long. Damage occurred in six states, but most severely at Charleston, with cracked walls, windows shattered, broken plaster, and chimneys fallen. Shaking was felt in 23 states from Washington, D.C. to Kansas and from southernmost Canada to New Orleans, LA.

A Missouri earthquake on **November 4, 1905**, cracked walls in Cairo. Aftershocks were felt over an area of 100,000 square miles in nine states. In Illinois, it cracked the wall of the new education building in Cairo and a wall at Carbondale, IL.

Among the largest earthquakes occurring in Illinois was the **May 26, 1909** shock, which knocked over many chimneys at Aurora. It was felt over 500,000 square miles and strongly felt in Iowa and Wisconsin. Buildings swayed in Chicago where there was fear that the walls would collapse. Just under two months later, a second Intensity VII earthquake occurred on **July 18, 1909**, damaged chimneys in Petersburg, IL, Hannibal, MO, and Davenport, IA. Over twenty windows were broken, bricks loosened and plaster cracked in the Petersburg area. This event was felt over 40,000 square miles.

On **November 7, 1958**, a shock along the Indiana border resulted in damage at Bartelso, Dale and Maunie, IL. Plaster cracked and fell, and a basement wall and floor were cracked.

On **August 14, 1965**, a sharp but local shock occurred at Tamms, IL, a town of about 600 people. The magnitude 5 quake damaged chimneys, cracked walls, knocked groceries from the shelves, and muddied the water supply. Thunderous earth noises were heard. This earthquake was only felt within a 10 mile radius of Tamms, in communities such as Elco, Unity, Olive Branch, and Olmsted, IL. Six aftershocks were felt.

An earthquake of Intensity VII occurred on **November 9, 1968**. This magnitude 5.3 shock was felt over an area of 580,000 square miles in 23 states. Damage consisted of bricks being knocked from chimneys, broken windows, toppled television antenna, and cracked plaster. There were scattered reports of cracked foundations, fallen parapets, and overturned tombstones. Chimney damage was limited to buildings 30 to 50 years old. Many people were frightened. Church bells rang at Broughton and several other towns. Loud rumbling earthquake noise was reported in many communities.

Dozens of other shocks originating in Missouri, Arkansas, Kansas, Nebraska, Tennessee, Indiana, Ohio, Michigan, Kentucky, and Canada have been felt in Illinois without causing damage. There have been three earthquakes slightly greater than magnitude 5.0 and Intensity level VII which occurred in 1968, 1987 and 2008 and that were widely felt throughout southern Illinois and the midcontinent.

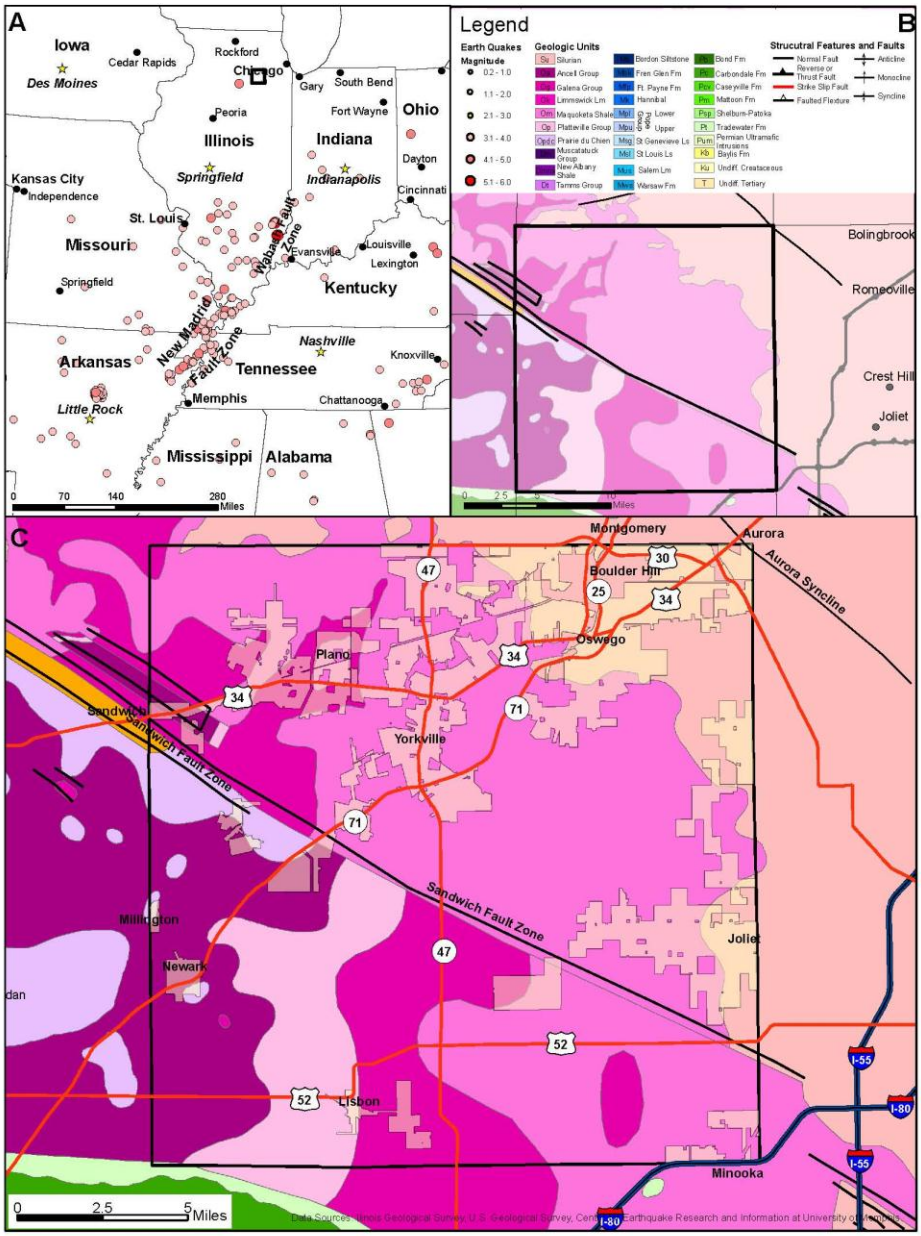
Above text adapted from *http://earthquake.usgs.gov/regional/states/illinois/history.php* and from *Seismicity of the United States, 1568-1989 (Revised), C.W. Stover and J.L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993.*

Geographic Location for Earthquake Hazard

Within Illinois, the two most significant zones of seismic activity are the New Madrid Seismic Zone and the Wabash Valley Fault System. There have been no earthquake epicenters recorded in Kendall County since 1974.

Figure 4-9 depicts the following: a) Location of notable earthquakes in the Illinois region; b) Generalized geologic bedrock map with earthquake epicenters, geologic structures, and inset of Kendall County; c) Geologic and earthquake epicenter map of Kendall County.

Figure 4-9 a, b, c: Kendall County Earthquakes



Hazard Extent for Earthquake Hazard

The extent of the earthquake is countywide. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. A National Earthquake Hazards Reduction Program (NEHRP) compliant soils map was used for the analysis which was provided by FEMA. The map identifies the soils most susceptible to failure.

Risk Identification for Earthquake Hazard

Based on historical information as well as current USGS and SIUC research and studies, future earthquakes in Kendall County are possible but, large (>5.5 M) earthquakes that would cause catastrophic damage are unlikely. Severe to catastrophic earthquake damage is unlikely because of the large distance (>300 miles) between Kendall County and the major Midwestern seismic zones, the New Madrid Seismic Zone and the Wabash Valley Fault Zone. According to the RPI, earthquakes are ranked as the number seven hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
1	x	2	=	2

Vulnerability Analysis for Earthquake Hazard

This hazard could impact the entire jurisdiction equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake and can expect the same impacts within the affected area. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities are vulnerable to earthquakes. A critical facility would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g. damaged homes will no longer be habitable causing residents to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not

available to this plan, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g. loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable causing traffic risks. Typical scenarios are described to gauge the anticipated impacts of earthquakes in the county in terms of numbers and types of buildings and infrastructure.

The SIUC-Polis team reviewed existing geological information and recommendations for earthquake scenarios. A deterministic and a probabilistic earthquake scenario were developed to provide a reasonable basis for earthquake planning in Kendall County. The deterministic scenario was a moment magnitude of 5.5 with the epicenter located in Kendall County along the Sandwich Fault Zone south of Yorkville. This represents a realistic scenario for planning purposes.

Additionally, the earthquake loss analysis included a probabilistic scenario based on ground shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude that would be typical of that expected for a 500-year return period.

The following earthquake hazard modeling scenarios were performed:

- 5.5 magnitude earthquake local epicenter
- 500-year return period event

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. Fortunately, a National Earthquake Hazards Reduction Program (NEHRP) soil classification map exists for Illinois. NEHRP soil classifications portray the degree of shear-wave amplification that can occur during ground shaking. FEMA provided a soils map and liquefaction potential map that was used by HAZUS-MH.

Earthquake hypocenter depths in Illinois range from less than 1.0 to ~25.0 km. The average hypocenter depth, ~10.0 km, was used for the deterministic earthquake scenario. For this scenario type HAZUS-MH also requires the user to define an attenuation function. To maintain consistency with the USGS's (2006) modeling of strong ground motion in the central United States, the Toro et al. (1997) attenuation function was used for the deterministic earthquake scenario.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

Results for 5.5 Magnitude Earthquake in Kendall County

The results of the initial analysis, the 5.5 magnitude earthquake with an epicenter along the Sandwich Fault Zone south of The United City of Yorkville, are depicted in Tables 4-24 and 4-25 and Figure 4-10. HAZUS estimates that approximately 2,600 buildings will be at least moderately damaged. This is more than 12% of the total number of buildings in the region. It is estimated that 109 buildings will be damaged beyond repair.

The total building related losses totaled $253.6 million; 14% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which comprised more than 64% of the total loss.

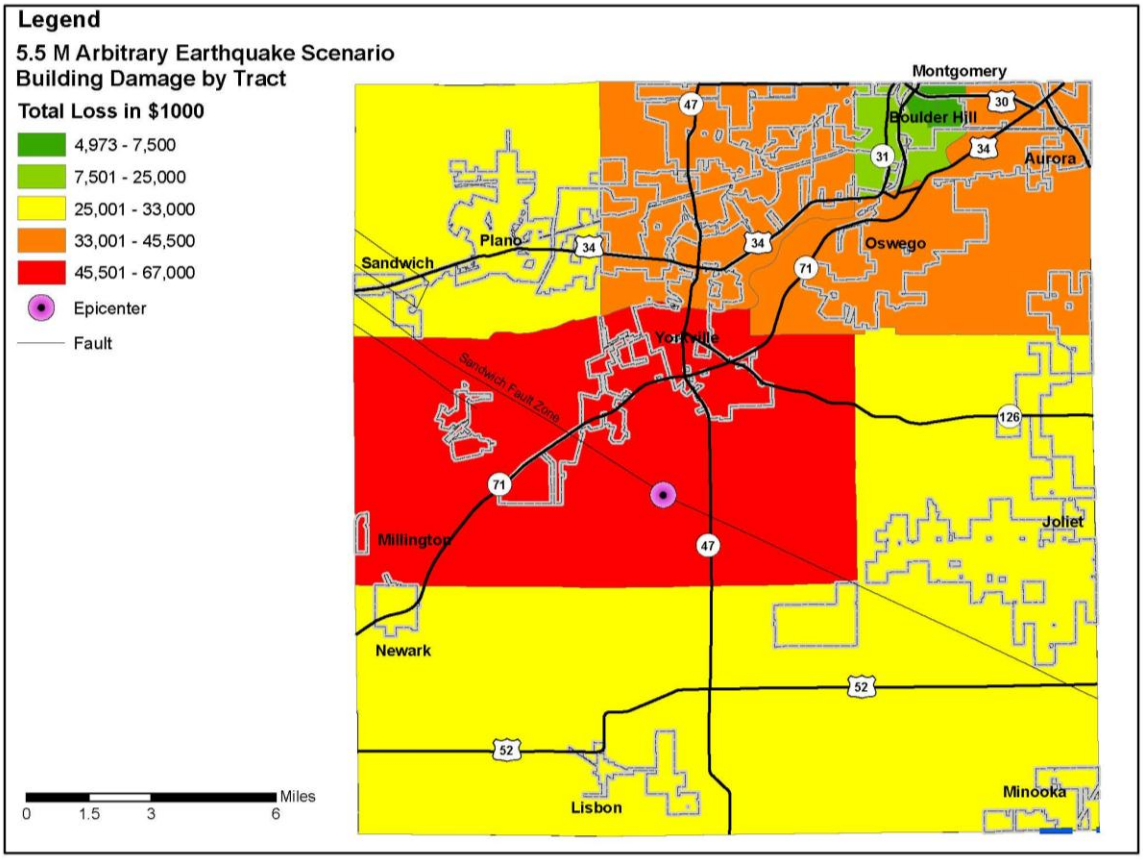
Table 4-24: Kendall County 5.5M Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	90	0.58	38	0.87	39	1.96	16	3.22	3	2.61
Commercial	660	4.23	230	5.26	177	8.89	59	11.68	10	9.51
Education	17	0.11	6	0.13	5	0.25	2	0.32	0	0.37
Government	10	0.07	4	0.10	4	0.22	1	0.28	0	0.36
Industrial	269	1.73	95	2.18	79	4.00	28	5.55	5	4.34
Other Residential	2,241	14.38	679	15.51	309	15.57	79	15.63	18	16.81
Religion	40	0.26	13	0.30	10	0.49	3	0.67	1	0.62
Single Family	12,260	78.65	3,309	75.64	1,362	68.62	316	62.64	72	65.37
Total	**15,588**		**4,375**		**1,985**		**505**		**110**	

Table 4-25: Kendall County 5.5M Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.40	5.26	0.45	0.45	6.55
	Capital-Related	0.00	0.17	5.03	0.27	0.10	5.57
	Rental	2.54	1.00	3.31	0.16	0.16	7.16
	Relocation	9.35	0.52	4.78	0.84	1.37	16.86
	Subtotal	**11.88**	**2.09**	**18.37**	**1.71**	**2.08**	**36.14**
Capital Stock Loses							
	Structural	19.71	1.10	6.84	2.39	2.38	32.41
	Non_Structural	81.07	8.01	19.69	9.29	5.04	123.09
	Content	34.62	2.72	12.55	6.73	3.43	60.04
	Inventory	0.00	0.00	0.42	1.37	0.15	1.93
	Subtotal	**135.39**	**11.83**	**39.49**	**19.78**	**10.99**	**217.48**
	Total	**147.28**	**13.92**	**57.86**	**21.49**	**13.07**	**253.62**

Figure 4-10: Kendall County 5.5M Scenario-Building Economic Losses in Thousands of Dollars



Kendall County 5.5M Scenario—Essential Facility Losses

Before the earthquake, the region had 188 care beds available for use. On the day of the earthquake, the model estimates that only 7 care beds (4%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 58% of the beds will be back in service. By day 30, 85% will be operational.

Results 5.0 Magnitude 500-Year Probabilistic Scenario

The results of the 500-year probabilistic analysis are depicted in Tables 4-26 and 4-27. HAZUS-MH estimates that approximately 183 buildings will be at least moderately damaged. This is more than 1% of the total number of buildings in the region. It is estimated that seven buildings will be damaged beyond repair. The total building-related losses totaled $8.64 million; 27% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up more than 60% of the total loss.

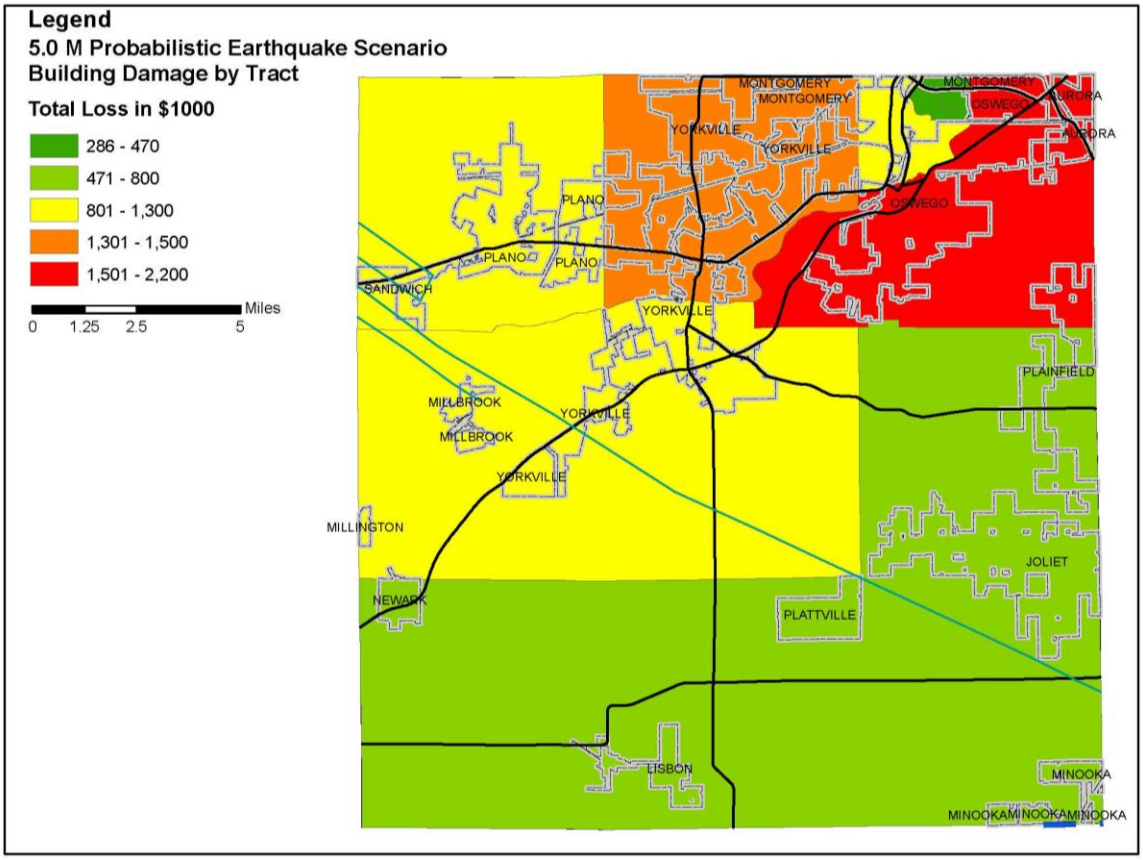
Table 4-26: 500-Year Probabilistic Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	174	0.80	8	1.51	3	2.12	0	2.12	0	1.28
Commercial	1,070	4.90	47	8.59	17	10.57	2	10.31	0	7.03
Education	28	0.13	1	0.24	0	0.31	0	0.30	0	0.33
Government	20	0.09	1	0.14	0	0.17	0	0.15	0	0.17
Industrial	449	2.06	20	3.60	7	4.56	1	4.41	0	2.62
Other Residential	3,220	14.75	79	14.43	23	14.44	3	14.21	0	15.02
Religion	63	0.29	3	0.48	1	0.65	0	0.66	0	0.59
Single Family	16,806	76.99	390	71.02	106	67.18	16	67.83	1	72.96
Total	**21,830**		**550**		**158**		**23**		**2**	

Table 4-27: 500-Year Probabilistic Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.01	0.36	0.03	0.03	0.43
	Capital-Related	0.00	0.01	0.33	0.02	0.01	0.36
	Rental	0.16	0.06	0.25	0.01	0.01	0.49
	Relocation	0.58	0.03	0.32	0.06	0.08	1.07
	Subtotal	**0.73**	**0.11**	**1.27**	**0.11**	**0.12**	**2.34**
Capital Stock Loses							
	Structural	1.27	0.08	0.45	0.15	0.13	2.08
	Non_Structural	2.36	0.21	0.56	0.18	0.12	3.44
	Content	0.39	0.03	0.19	0.10	0.04	0.75
	Inventory	0.00	0.00	0.01	0.02	0.00	0.03
	Subtotal	**4.03**	**0.31**	**1.21**	**0.45**	**0.30**	**6.29**
	Total	**4.76**	**0.43**	**2.48**	**0.56**	**0.41**	**8.64**

Figure 4-11: Kendall County 5.5M Probabilistic Earthquake Scenario-Building Economic Losses in Thousands of Dollars



500-Year Probabilistic Scenario—Essential Facility Losses

Before the earthquake, the region had 188 care beds available for use. On the day of the earthquake, the model estimates that only 113 care beds (61%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 98% of the beds will be back in service. By day 30, 100% will be operational.

Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, will accommodate earthquake mitigation design standards.

Analysis of Community Development Trends

Community development will occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction.

In Meeting #4, the MHMP team discussed specific mitigation strategies for potential earthquake hazards. The discussion included strategies to harden and protect future, as well as existing, structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication.

4.4.4 Thunderstorm Hazard

Hazard Definition for Thunderstorm Hazard

Severe thunderstorms are defined as thunderstorms with one or more of the following characteristics: strong winds, large damaging hail, or frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur any month of the year at any time of day. A severe thunderstorm's impacts can be localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria.

- Hail of diameter 0.75 inches or higher
- Frequent and dangerous lightning
- Wind speeds equal to or greater than 58 miles per hour

Hail

Hail is a product of a strong thunderstorm. Hail usually falls near the center of a storm, however strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, but hailstones larger than softballs have been reported on rare occasions.

Lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but in reality lightning causes damage to many structures and kills or severely injures numerous people in the United States each year.

Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are a fairly common occurrence across Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences for Thunderstorm Hazard

The NCDC database reported 37 hail storms in Kendall County since 1956. Hail storms occur nearly every year in the late spring and early summer months. The most recent reported occurrence was in October 2006 when severe thunderstorms developed over northeast Illinois.

Kendall County hail storms are identified in Table 4-28. Additional details for NCDC events are included in Appendix D.

Table 4-28: Kendall County Hail Storms*

Location or County	Date	Type	Magnitude	Death	Injuries	Property Damage	Crop Damage
Kendall County	3/6/1956	Hail	0.75 in.	0	0	0	0
Kendall County	6/16/1973	Hail	1.75 in.	0	0	0	0
Kendall County	6/20/1975	Hail	1.75 in.	0	0	0	0
Kendall County	7/1/1983	Hail	1.00 in.	0	0	0	0
Yorkville	4/10/1995	Hail	0.50 in.	0	0	0	0
Plattville	4/19/1996	Hail	1.00 in.	0	0	0	0
Plattville	4/19/1996	Hail	0.75 in.	0	0	0	0
Newark	6/10/1999	Hail	1.00 in.	0	0	0	0
Newark	5/12/2000	Hail	1.75 in.	0	0	0	0
Yorkville	5/12/2000	Hail	3.50 in.	0	0	0	0
Oswego	5/12/2000	Hail	1.75 in.	0	0	0	0
Millington	5/18/2000	Hail	0.75 in.	0	0	0	0
Yorkville	5/18/2000	Hail	0.75 in.	0	0	0	0
Plano	9/11/2000	Hail	0.75 in.	0	0	0	0
Oswego	6/25/2002	Hail	1.00 in.	0	0	0	0
Plattville	6/25/2002	Hail	0.88 in.	0	0	0	0
Bristol	5/28/2003	Hail	0.75 in.	0	0	0	0
Plano	7/11/2003	Hail	1.00 in.	0	0	0	0
Yorkville	7/15/2003	Hail	0.75 in.	0	0	0	0
Oswego	8/1/2003	Hail	1.00 in.	0	0	0	0
Boulder Hill	8/1/2003	Hail	0.88 in.	0	0	0	0
Yorkville	5/23/2004	Hail	0.75 in.	0	0	0	0
Yorkville	5/23/2004	Hail	1.75 in.	0	0	0	0
Yorkville	7/21/2004	Hail	0.75 in.	0	0	0	0
Yorkville	3/30/2005	Hail	1.00 in.	0	0	0	0
Yorkville	3/30/2005	Hail	1.75 in.	0	0	0	0
Newark	3/30/2005	Hail	0.75 in.	0	0	0	0
Oswego	5/11/2005	Hail	1.00 in.	0	0	0	0
Oswego	5/19/2005	Hail	0.75 in.	0	0	0	0
Plano	6/4/2005	Hail	0.88 in.	0	0	0	0
Oswego	4/2/2006	Hail	1.00 in.	0	0	0	0
Plano	4/14/2006	Hail	1.00 in.	0	0	0	0
Oswego	4/14/2006	Hail	0.75 in.	0	0	0	0
Central	4/14/2006	Hail	0.88 in.	0	0	0	0
Oswego	4/16/2006	Hail	0.75 in.	0	0	0	0
Lisbon	10/2/2006	Hail	0.75 in.	0	0	0	0
Lisbon	10/2/2006	Hail	0.75 in.	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported no occurrences of significant lightning strikes in Kendall County since 1954.

The NCDC database identified 92 wind storms reported since 1957, the most recent of which was reported in August 2009 when storms produced wind gusts between 60 and 70 miles per hour.

As shown in Table 4-29, wind storms have historically occurred year-round with the greatest frequency and damage between May and July. The following table includes available top wind speeds for Kendall County.

Table 4-29: Kendall County Wind Storms*

Location or County	Date	Type	Magnitude	Death	Injuries	Property Damage	Crop Damage
Kendall County	8/3/1957	Tstm Wind	n/a	0	0	0	0
Kendall County	5/15/1968	Tstm Wind	n/a	0	0	0	0
Kendall County	5/15/1968	Tstm Wind	n/a	0	0	0	0
Kendall County	5/12/1970	Tstm Wind	61 kts.	0	0	0	0
Kendall County	6/30/1977	Tstm Wind	n/a	0	0	0	0
Kendall County	7/9/1980	Tstm Wind	58 kts.	0	0	0	0
Kendall County	8/28/1990	Tstm Wind	80 kts.	0	0	0	0
Kendall County	7/2/1992	Tstm Wind	n/a	0	0	0	0
Yorkville	8/23/1993	Tstm Wind	n/a	0	0	0	0
Plattville	5/25/1994	Tstm Wind	n/a	0	0	0	0
Northern Illinois	10/24/1995	High Wind	n/a	2	0	0	0
Northern Illinois	3/25/1996	High Wind	48 kts.	0	0	0	0
Northwest	6/23/1996	Tstm Wind	n/a	0	0	0	0
Oswego	7/24/1996	Tstm Wind	n/a	0	0	0	0
Countywide	10/29/1996	Tstm Wind	57 kts.	0	0	0	0
Yorkville	5/18/1997	Tstm Wind	50 kts.	0	0	0	0
Countywide	7/18/1997	Tstm Wind	50 kts.	0	0	0	0
Northern Illinois	9/29/1997	High Wind	56 kts.	0	0	0	0
Yorkville	5/28/1998	Tstm Wind	50 kts.	0	0	0	0
Sandwich	6/18/1998	Tstm Wind	64 kts.	0	0	0	0
Lisbon	6/28/1998	Tstm Wind	50 kts.	0	0	0	0
Lisbon	6/29/1998	Tstm Wind	61 kts.	0	0	0	0
Oswego	8/24/1998	Tstm Wind	50 kts.	0	0	0	0
Lisbon	9/20/1998	Tstm Wind	50 kts.	0	0	0	0
Northern Illinois	11/10/1998	High Wind	56 kts.	0	4	0	0
Countywide	11/10/1998	Tstm Wind	50 kts.	0	0	0	0
Oswego	7/21/1999	Tstm Wind	50 kts.	0	0	0	0
Sandwich	5/18/2000	Tstm Wind	52 kts.	0	0	0	0
Newark	5/18/2000	Tstm Wind	60 kts.	0	0	0	0
Sandwich	8/6/2000	Tstm Wind	52 kts.	0	0	0	0
Northern Illinois	2/25/2001	Strong Wind	n/a	0	0	0	0
Newark	6/14/2001	Tstm Wind	50 kts.	0	0	0	0
Yorkville	7/22/2001	Tstm Wind	50 kts.	0	0	0	0
Oswego	9/6/2001	Tstm Wind	50 kts.	0	0	0	0
Northern Illinois	3/9/2002	High Wind	51 kts.	4	4	200K	0
Yorkville	6/4/2002	Tstm Wind	50 kts.	0	0	0	0

Location or County	Date	Type	Magnitude	Death	Injuries	Property Damage	Crop Damage
Yorkville	5/30/2003	Tstm Wind	60 kts.	0	0	0	0
Yorkville	7/7/2003	Tstm Wind	50 kts.	0	0	0	0
Plano	7/7/2003	Tstm Wind	50 kts.	0	0	0	0
Plano	7/11/2003	Tstm Wind	61 kts.	0	0	0	0
Lisbon	7/11/2003	Tstm Wind	50 kts.	0	0	0	0
Oswego	7/17/2003	Tstm Wind	50 kts.	0	0	0	0
Countywide	7/27/2003	Tstm Wind	57 kts.	0	0	0	0
Plano	7/31/2003	Tstm Wind	52 kts.	0	0	0	0
Northern Illinois	11/13/2003	High Wind	51 kts.	0	2	0	0
Yorkville	5/12/2004	Tstm Wind	50 kts.	0	0	0	0
Oswego	5/12/2004	Tstm Wind	50 kts.	0	0	0	0
Millbrook	5/13/2004	Tstm Wind	57 kts.	0	0	0	0
Plano	5/13/2004	Tstm Wind	58 kts.	0	0	0	0
Little Rock	5/13/2004	Tstm Wind	61 kts.	0	0	0	0
Bristol	5/13/2004	Tstm Wind	50 kts.	0	0	0	0
Yorkville	5/30/2004	Tstm Wind	50 kts.	0	0	0	0
Yorkville	5/30/2004	Tstm Wind	53 kts.	0	0	0	0
Countywide	5/30/2004	Tstm Wind	50 kts.	0	0	0	0
Plano	5/30/2004	Tstm Wind	50 kts.	0	1	0	0
Yorkville	7/22/2004	Tstm Wind	50 kts.	0	0	0	0
Newark	3/30/2005	Tstm Wind	50 kts.	0	0	0	0
Yorkville	5/19/2005	Tstm Wind	55 kts.	0	0	0	0
Yorkville	5/19/2005	Tstm Wind	50 kts.	0	0	0	0
Lisbon	8/2/2006	Tstm Wind	52 kts.	0	0	0	0
Plano	8/3/2006	Tstm Wind	50 kts.	0	0	0	0
Newark	8/10/2006	Tstm Wind	55 kts.	0	0	0	0
Boulder Hill	10/2/2006	Tstm Wind	50 kts.	0	0	25K	0
Yorkville	10/2/2006	Tstm Wind	55 kts.	0	0	0	0
Plano	10/2/2006	Tstm Wind	50 kts.	0	0	0	0
Plano	10/2/2006	Tstm Wind	50 kts.	0	0	0	0
Newark	3/31/2007	Tstm Wind	61 kts.	0	0	0	0
Bristol Station	3/31/2007	Tstm Wind	61 kts.	0	0	0	0
Plano	6/1/2007	Tstm Wind	50 kts.	0	0	5K	0
Yorkville	6/1/2007	Tstm Wind	56 kts.	0	0	5K	0
Plano	7/10/2007	Tstm Wind	50 kts.	0	0	0	0
Boulder Hill	7/18/2007	Tstm Wind	50 kts.	0	0	0	0
Yorkville	7/18/2007	Tstm Wind	50 kts.	0	0	0	0
Plattville	8/23/2007	Tstm Wind	50 kts.	0	0	0	0
Little Rock	6/15/2008	Tstm Wind	50 kts.	0	0	0	0
Yorkville	6/15/2008	Tstm Wind	50 kts.	0	0	0	0
Plano	6/28/2008	Tstm Wind	50 kts.	0	0	0	0
Plattville	7/10/2008	Tstm Wind	55 kts.	0	0	1K	0
Lisbon Center	7/10/2008	Tstm Wind	55 kts.	0	0	0	0
Millbrook	8/4/2008	Tstm Wind	52 kts.	0	0	1K	0
Plano	8/4/2008	Tstm Wind	56 kts.	0	0	4K	0
Bristol	8/4/2008	Tstm Wind	61 kts.	0	0	1K	0

Location or County	Date	Type	Magnitude	Death	Injuries	Property Damage	Crop Damage
Plattville	6/19/2009	Tstm Wind	56 kts.	0	0	1K	0
Yorkville	6/19/2009	Tstm Wind	61 kts.	0	0	1K	0
Oswego	6/19/2009	Tstm Wind	65 kts.	0	0	0	0
Yorkville	6/19/2009	Tstm Wind	61 kts.	0	0	1K	0
Boulder Hill	8/16/2009	Tstm Wind	54 kts.	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Thunderstorm Hazard

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

Hazard Extent for Thunderstorm Hazard

The extent of the historical thunderstorms varies in terms of the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

Risk Identification for Thunderstorm Hazard

Based on historical information, the occurrence of future high winds, hail, and lightning is highly likely. High winds with widely varying magnitudes are expected to happen. According to the RPI, thunderstorms and high wind damage ranked as the number one hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	**2**	=	**8**

Vulnerability Analysis for Thunderstorm Hazard

Severe thunderstorms are an equally distributed threat across the entire jurisdiction; therefore, the entire county's population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. This plan will therefore consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Kendall County are discussed in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of

all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is provided in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g. a damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a severe thunderstorm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable it is important to emphasize that any number of these items could become damaged during a severe thunderstorm. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

Potential Dollar Losses for Thunderstorm Hazard

A HAZUS-MH analysis was not completed for thunderstorms because the widespread extent of such a hazard makes it difficult to accurately model outcomes.

To determine dollar losses for a thunderstorm hazard, the available NCDC hazard information was condensed to include only thunderstorm hazards that occurred within the past ten years. Kendall County's MHMP team then reviewed the property damages reported to NCDC and made any applicable updates.

It was determined that since 1999, Kendall County has incurred $245,000 in damages relating to thunderstorms, including hail, lightning, and high winds. The events resulting in property damage are listed in Table 4-30.

Table 4-30: Kendall County Property Damage (1999–Present)

Location or County	Date	Type	Property Damage
		1999-2001 Subtotal	$ -
Northern Illinois	03/09/02	High Wind	$ 200,000
		2002 Subtotal	$ 200,000
		2003-2005 Subtotal	$ -
Boulder Hill	10/02/06	Tstm Wind	$ 25,000
		2006 Subtotal	$ 25,000
Plano	06/01/07	Tstm Wind	$ 5,000
Yorkville	06/01/07	Tstm Wind	$ 5,000
		2007 Subtotal	$ 10,000

Location or County	Date	Type	Property Damage
Plattville	07/10/08	Tstm Wind	$ 1,000
Millbrook	08/04/08	Tstm Wind	$ 1,000
Plano	08/04/08	Tstm Wind	$ 4,000
Bristol	08/04/08	Tstm Wind	$ 1,000
		2008 Subtotal	$ 7,000
Plattville	06/19/09	Tstm Wind	$ 1,000
Yorkville	06/19/09	Tstm Wind	$ 1,000
Yorkville	06/19/09	Tstm Wind	$ 1,000
		2009 Subtotal	$ 3,000
		Total Property Damage	**$ 245,000**

The historical data has not been collected systematically or confirmed. As a result, potential dollar losses for a future event cannot be precisely calculated; however, based on averages in the last decade, it can be determined that Kendall County incurs an annual risk of approximately $24,500 per year.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

All future development within the county and all communities will remain vulnerable to these events.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warning of approaching storms are also vital to preventing the loss of property and ensuring the safety of Kendall County residents.

4.4.5 Winter Storm Hazard

Hazard Definition for Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and strong weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, and death.

Ice (glazing) and Sleet Storms

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves frozen raindrops that bounce when they hit the ground or other objects. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

The most damaging winter storms in southern Illinois have been ice storms. Ice storms occur when moisture-laden gulf air converges with the northern jet stream causing strong winds and heavy precipitation. This precipitation takes the form of freezing rain coating power and communication lines and trees with heavy ice. The winds will then cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication.

Snowstorms

Significant snowstorms are characterized by the rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility. A blizzard is categorized as a snowstorm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. The strong winds during a blizzard blow about falling and already existing snow, creating poor visibility and impassable roadways. Blizzards have the potential to result in property damage.

Illinois has repeatedly been struck by blizzards. Blizzard conditions cannot only cause power outages and loss of communication, but also make transportation difficult. The blowing of snow can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe Cold

Severe cold is characterized by the ambient air temperature dropping to around 0°F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature's effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person's body will decrease.

Previous Occurrences for Winter Storm Hazard

The NCDC database identified 33 winter storm and extreme cold events for Kendall County since 1994. The most recent reported event occurred on January 14, 2009, when a small winter storm moved across northern Illinois. Snowfall amounts ranged from 6 to 7 inches.

The NCDC winter storms are listed in Table 4-32. Additional details for NCDC events are included in Appendix D.

Table 4-32: Winter Storm Events*

Location or County	Date	Type	Deaths	Injuries	Property Damage	Crop Damage
Northeast Illinois	1/26/1994	Ice Storm	0	0	0	0
Statewide	12/8/1995	Winter Storm	0	0	0	0
Statewide	2/2/1996	Extreme Cold	3	0	0	0
Statewide	1/15/1997	Winter Storm	5	0	0	0
Statewide	3/9/1998	Heavy Snow	0	0	0	0
Statewide	1/1/1999	Heavy Snow	1	0	0	0
Statewide	3/8/1999	Heavy Snow	0	0	0	0
Statewide	1/19/2000	Heavy Snow	0	0	0	0
Statewide	2/18/2000	Heavy Snow	0	0	0	0
Statewide	12/11/2000	Blizzard	0	0	0	0
Statewide	1/30/2002	Winter Storm	0	0	0	0
Statewide	3/2/2002	Winter Storm	0	0	0	0
Statewide	3/4/2003	Winter Storm	0	0	0	0
Statewide	5/3/2004	Frost/freeze	0	0	0	0
Statewide	1/4/2005	Heavy Snow	0	0	0	0
Statewide	1/21/2005	Heavy Snow	0	0	0	0
Statewide	11/30/2006	Winter Storm	0	0	0	0
Statewide	12/1/2006	Winter Storm	0	0	0	0
Statewide	2/6/2007	Winter Storm	0	0	0	0
Statewide	2/13/2007	Blizzard	0	0	0	0
Statewide	2/25/2007	Blizzard	0	0	0	0
Statewide	2/25/2007	Winter Storm	0	0	0	0
Statewide	12/1/2007	Ice Storm	0	0	5K	0
Statewide	1/29/2008	Winter Storm	0	0	0	0
Statewide	2/1/2008	Winter Storm	0	0	0	0
Statewide	12/18/2008	Ice Storm	0	0	0	0
Statewide	12/18/2008	Winter Storm	0	0	0	0
Kendall County	1/14/2009	Winter Storm	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Winter Storm Hazard

Severe winter storms are regional in nature. Most of the NCDC data is calculated regionally or in some cases statewide.

Hazard Extent for Winter Storm Hazard

The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the jurisdiction.

Risk Identification for Winter Storm Hazard

Based on historical information and input from the planning team, the occurrence of future winter storms is likely. Winter storms of varying magnitudes are expected to happen. According to the RPI, winter storms were ranked as the number five hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	1	=	3

Vulnerability Analysis for Winter Storm Hazard

Winter storm impacts are equally distributed across the entire jurisdiction; therefore, the entire county is vulnerable to a winter storm and can expect the same impacts within the affected area. The building exposure for Kendall County, as determined from the building inventory, is included in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to a winter storm. A critical facility will encounter many of the same impacts as other buildings within the jurisdiction. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-9 lists the types and numbers of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

During a winter storm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable it is important to emphasize that any number of these items could become damaged during a winter storm. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses for Winter Storm Hazard

A HAZUS-MH analysis was not completed for winter storms because the widespread extent of such a hazard makes it difficult to accurately model outcomes.

To determine dollar losses for a winter storm hazard, the available NCDC hazard information was condensed to include only winter storm hazards that occurred within the past ten years. Kendall County's MHMP team then reviewed the property damages reported to NCDC and made any applicable updates.

Review of NCDC Database and other historical records revealed Kendall County has not incurred significant property damages over the last decade (1999-2009) from winter storms, including sleet/ice and heavy snow.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Any new development within the county will remain vulnerable to these events.

Analysis of Community Development Trends

Because the winter storm events are regional in nature future development will be equally impacted across the county.

4.4.6 Hazardous Materials Storage and Transport Hazard

Hazard Definition for Hazardous Materials Storage and Transport Hazard

Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances between our borders every day. The transportation of chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce creating a demand for fertilizers, herbicides, and pesticides to be transported along rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences for Hazardous Materials Storage and Transport Hazard

Kendall County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries, although there have been many minor releases that have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Kendall County residents.

Geographic Location for Hazardous Materials Storage and Transport Hazard

The hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Hazard Extent for Hazardous Materials Storage and Transport Hazard

The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification for Hazardous Materials Release

Based on input from the planning team, the occurrence of a hazardous materials accident is likely. According to the RPI, Hazardous Materials Storage and Transport ranked as the number three hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis for Hazardous Materials Storage and Transport Hazard

Hazardous material impacts are an equally distributed threat across the entire jurisdiction; therefore, the entire county is vulnerable to a hazardous material release and can expect the same impacts within the affected area. The main concern during a release or spill is the population affected. The building exposure for Kendall County, as determined from building inventory, is included in Table 4-10. This plan will therefore consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris and loss of function of the building (e.g. a damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a hazardous material release the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan it is important to emphasize that any number of these items could become damaged in the event of a hazardous material release. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

In terms of numbers and types of buildings and infrastructure, typical scenarios are described to gauge the anticipated impacts of hazardous material release events in the county.

The U.S. EPA's ALOHA (Areal Locations of Hazardous Atmospheres) model was utilized to assess the area of impact for an anhydrous ammonia release at the intersection of Burlington Northern and Santa Fe Railroad and Fox River Drive Road in Plano. The target area was selected for three primary reasons: 1) the high volume traffic, 2) the area is highly populated and 3) proximity to several critical facilities.

Chlorine is a greenish yellow gas with a pungent suffocating odor. The gas liquefies at -35°C and room pressure or will liquefy from pressure applied at room temperature. Contact with

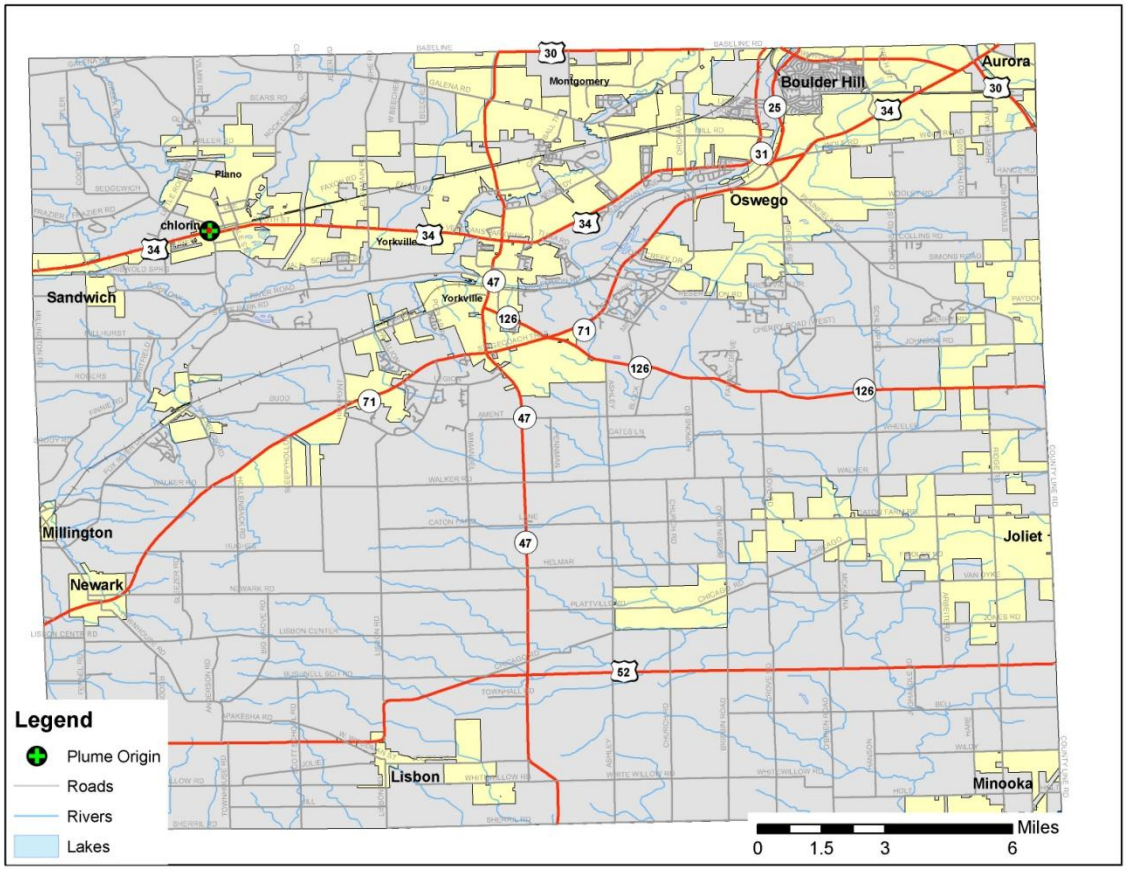
unconfined liquid chlorine can cause frostbite from evaporative cooling. Chlorine does not burn, but, like oxygen, supports combustion. The toxic gas can have adverse health effects from either long-term inhalation of low concentrations of vapors or short-term inhalation of high concentrations. Chlorine vapors are much heavier than air and tend to settle in low areas. Chlorine is commonly used to purify water, bleach wood pulp, and make other chemicals (NOAA Reactivity 2007).

Source: http://cameochemicals.noaa.gov/chemical/2862

ALOHA is a computer program designed especially for use by people responding to chemical accidents, as well as for emergency planning and training. Chlorine is a common chemical used in industrial operations and can be found in either liquid or gas form. Rail and truck tankers commonly haul Chlorine to and from facilities.

For this scenario, moderate atmospheric and climatic conditions with a slight breeze from the west-southwest were assumed. The target area was chosen due to its proximity to the residential, commercial, and essential facility locations. The geographic area covered in this analysis is depicted in Figure 4-12.

Figure 4-12: Location of Chemical Release



Analysis

The ALOHA atmospheric modeling parameters, depicted in Figure 4-13, were based upon a westerly wind speed of five miles per hour. The temperature was 70°F with 50% humidity and a cloud cover of five-tenths skies.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 10.4 feet and the length set to 53 feet (33,500 gallons). At the time of its release, it was estimated that the tank was 85% full. The chlorine in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to the ALOHA parameters, approximately 10,600 pounds of material would be released per minute. The image in Figure 4-14 depicts the plume footprint generated by ALOHA.

Figure 4-13: ALOHA Plume Modeling Parameters

SITE DATA:
Location: PLANO, ILLINOIS
Building Air Exchanges Per Hour: 0.48 (unsheltered single storied)
Time: June 3, 2010 1515 hours CDT (using computer's clock)

CHEMICAL DATA:
Chemical Name: CHLORINE Molecular Weight: 70.91 g/mol
AEGL-1(60 min): 0.5 ppm AEGL-2(60 min): 2 ppm AEGL-3(60 min): 20 ppm
IDLH: 10 ppm
Ambient Boiling Point: -30.1° F
Vapor Pressure at Ambient Temperature: greater than 1 atm
Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

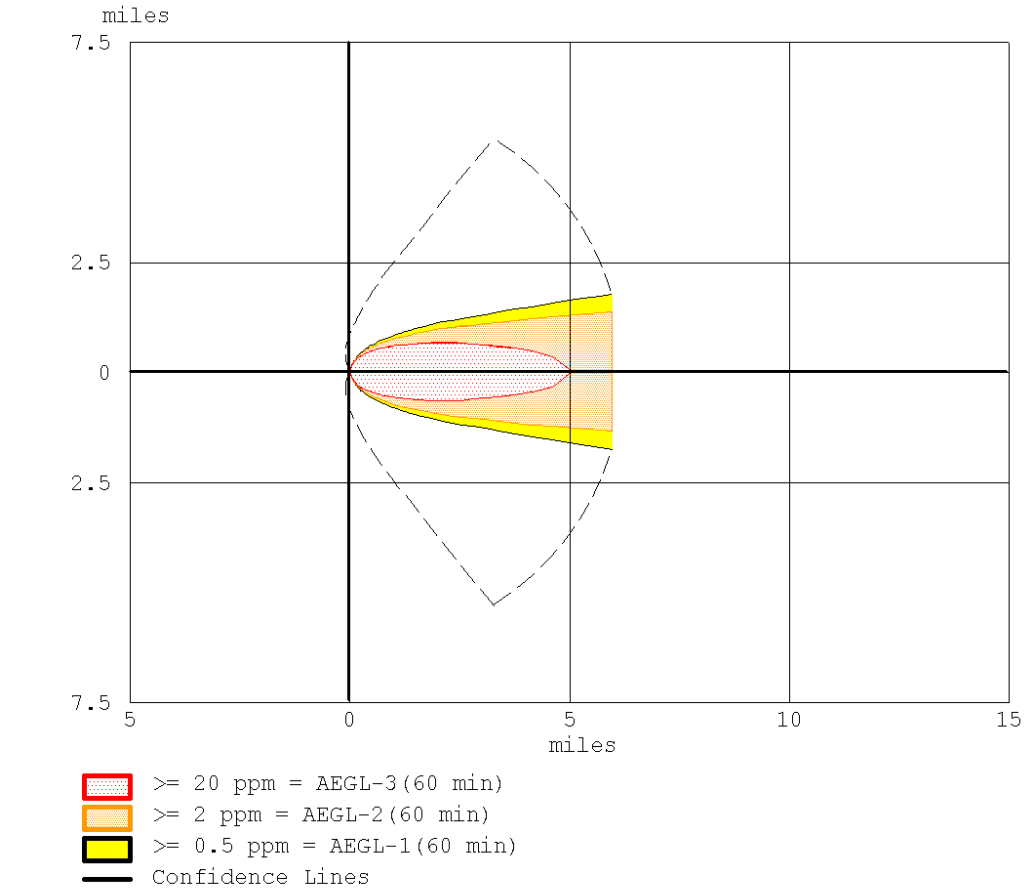
ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
Wind: 5 miles/hour from WSW at 3 meters
Ground Roughness: open country Cloud Cover: 5 tenths
Air Temperature: 70° F Stability Class: B
No Inversion Height Relative Humidity: 50%

SOURCE STRENGTH:
Leak from hole in horizontal cylindrical tank
Non-flammable chemical is escaping from tank
Tank Diameter: 10.4 feet Tank Length: 53 feet
Tank Volume: 33,679 gallons
Tank contains liquid Internal Temperature: 70° F
Chemical Mass in Tank: 168 tons Tank is 85% full
Circular Opening Diameter: 2.5 inches
Opening is 12 inches from tank bottom
Release Duration: ALOHA limited the duration to 1 hour
Max Average Sustained Release Rate: 10,600 pounds/min
(averaged over a minute or more)
Total Amount Released: 322,402 pounds

Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).

THREAT ZONE:
Model Run: Heavy Gas
Red : 5.1 miles --- (20 ppm = AEGL-3(60 min))
Orange: greater than 6 miles --- (2 ppm = AEGL-2(60 min))
Yellow: greater than 6 miles --- (0.5 ppm = AEGL-1(60 min))

Figure 4-14: Plume Footprint Generated by ALOHA



Acute Exposure Guideline Levels (AEGLs) are intended to describe the health effects on humans due to once-in-a-lifetime or rare exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm). The image in Figure 4-15 depicts the plume footprint generated by ALOHA in ArcGIS.

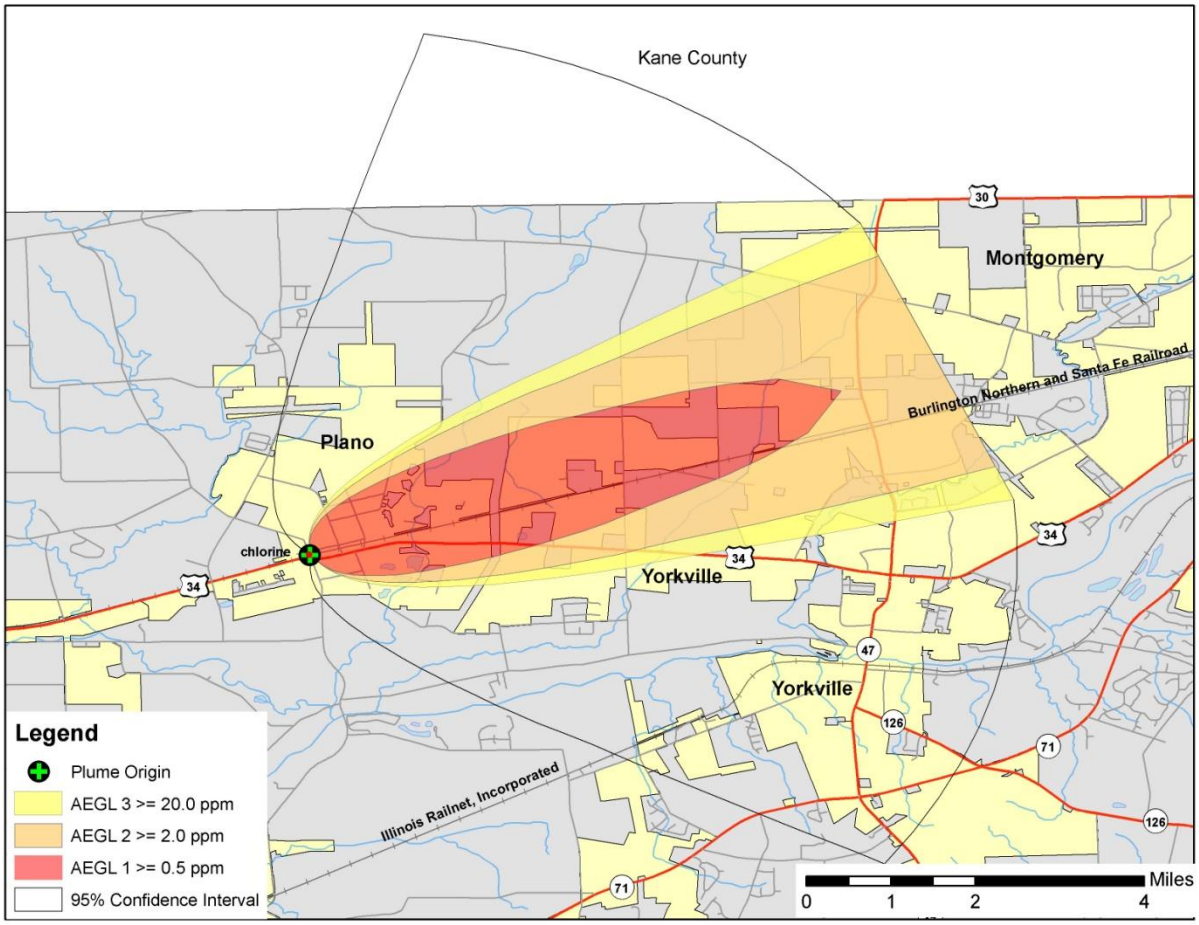
- **AEGL 3:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death. The red buffer (≥ 20.0 ppm) extends no more than six miles from the point of release after one hour.

- **AEGL 2:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. The orange buffer (≥ 2.0 ppm) extends no more than six miles from the point of release after one hour.

- **AEGL 1:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure. The yellow buffer (≥ 0.5 ppm) extends more than six miles from the point of release after one hour.

- **Confidence Lines**: The dashed lines depict the level of confidence in which the exposure level will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

Figure 4-15: ALOHA Plume Footprint Overlaid in ArcGIS

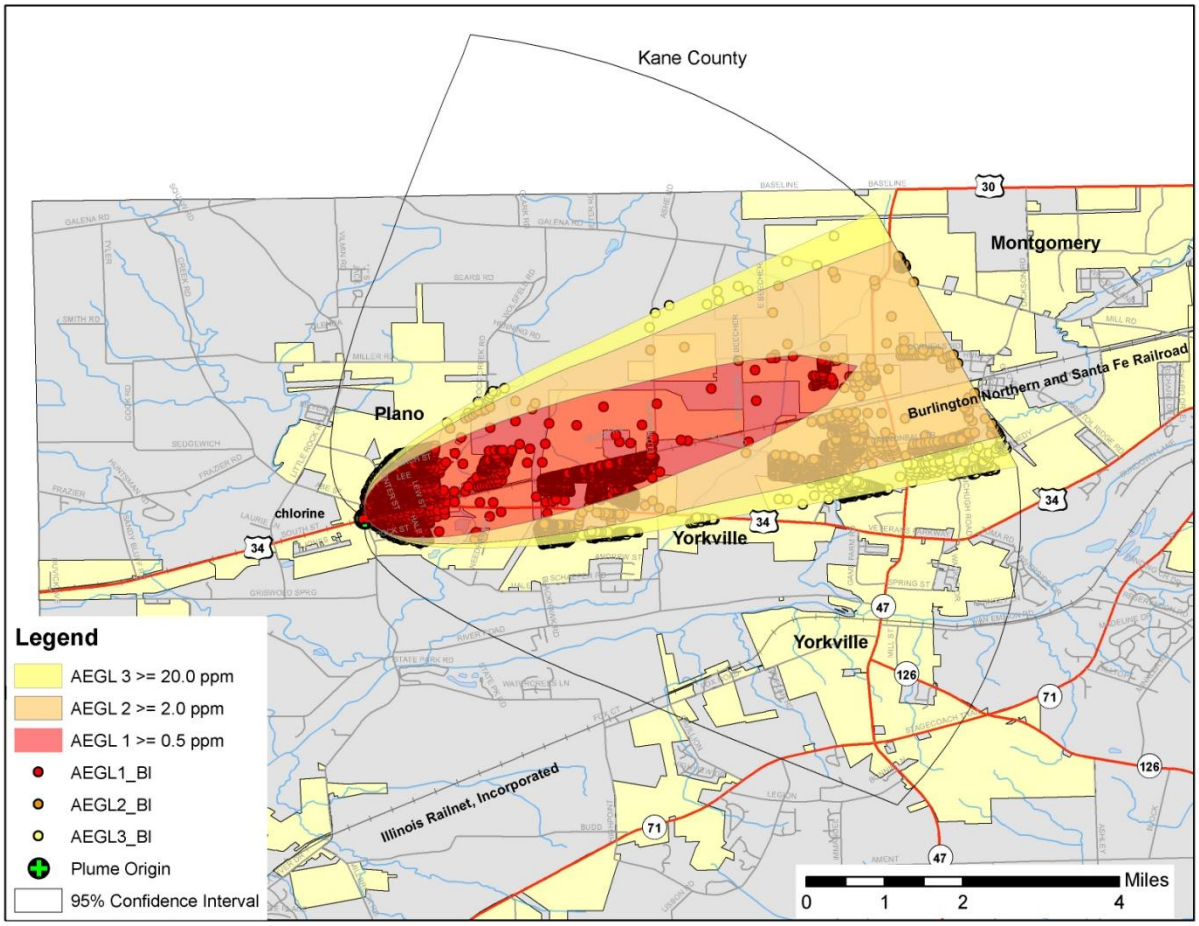


Results

By summing the building inventory within all AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and Level 1: ≥ 0.5 ppm.), the GIS overlay analysis predicts that as many as 3,486 buildings could be exposed at a replacement cost of $1.06 billion. If this event were to occur, approximately 9,100 people would be affected. The results are depicted in Figure 4-16.

The Assessor records often do not distinguish parcels by occupancy class when the parcels are not taxable; therefore, the total number of buildings and the building replacement costs for government, religious/non-profit, and education may be underestimated.

Figure 4-16: Kendall County Building Inventory Classified By Plume Footprint



Building Inventory Damage

The results of the analysis against the building inventory points are depicted in Tables 4-33 through 4-36. Table 4-33 summarizes the results of the chemical spill by combining all AEGL level. Tables 4-34 through 4-36 summarize the results of the chemical spill for each level separately.

Table 4-33: Estimated Exposure for all Level (all ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	8,120	3,248	$750,994,061
Commercial	0	171	$88,458,684
Industrial	0	18	$184,775,033
Agriculture	0	28	$12,712,362
Religious	0	0	$0
Government	0	8	$8,200,000
Education	(1,009)	2	$19,037,700
Total	**8,120**	**3,475**	**$1,064,177,839**

Table 4-34: Estimated Exposure for Level 3 (>=20 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	3,880	1,552	$322,264,638
Commercial	0	101	$27,038,880
Industrial	0	15	$162,190,808
Agriculture	0	11	$4,857,168
Religious	0	0	$0
Government	0	2	$3,100,000
Education	(489)	1	$8,283,000
Total	**3,880**	**1,682**	**$527,734,494**

Table 4-35: Estimated Exposure for Level 2 (>=160 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	3,053	1,221	$305,846,285
Commercial	0	63	$33,088,362
Industrial	0	3	$22,584,225
Agriculture	0	12	$5,711,604
Religious	0	0	$0
Government	0	2	$1,600,000
Education	0	0	$0
Total	**3,053**	**1,301**	**$368,830,476**

Table 4-36: Estimated Exposure for Level 1 (>=30 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	1,188	475	$122,883,138
Commercial	0	7	$28,331,442
Industrial	0	0	$0
Agriculture	0	5	$2,143,590
Religious	0	0	$0
Government	0	4	$3,500,000
Education	(520)	1	$10,754,700
Total	**1,198**	**492**	**$167,612,870**

(##) Number of students in effected school, not included in total population.

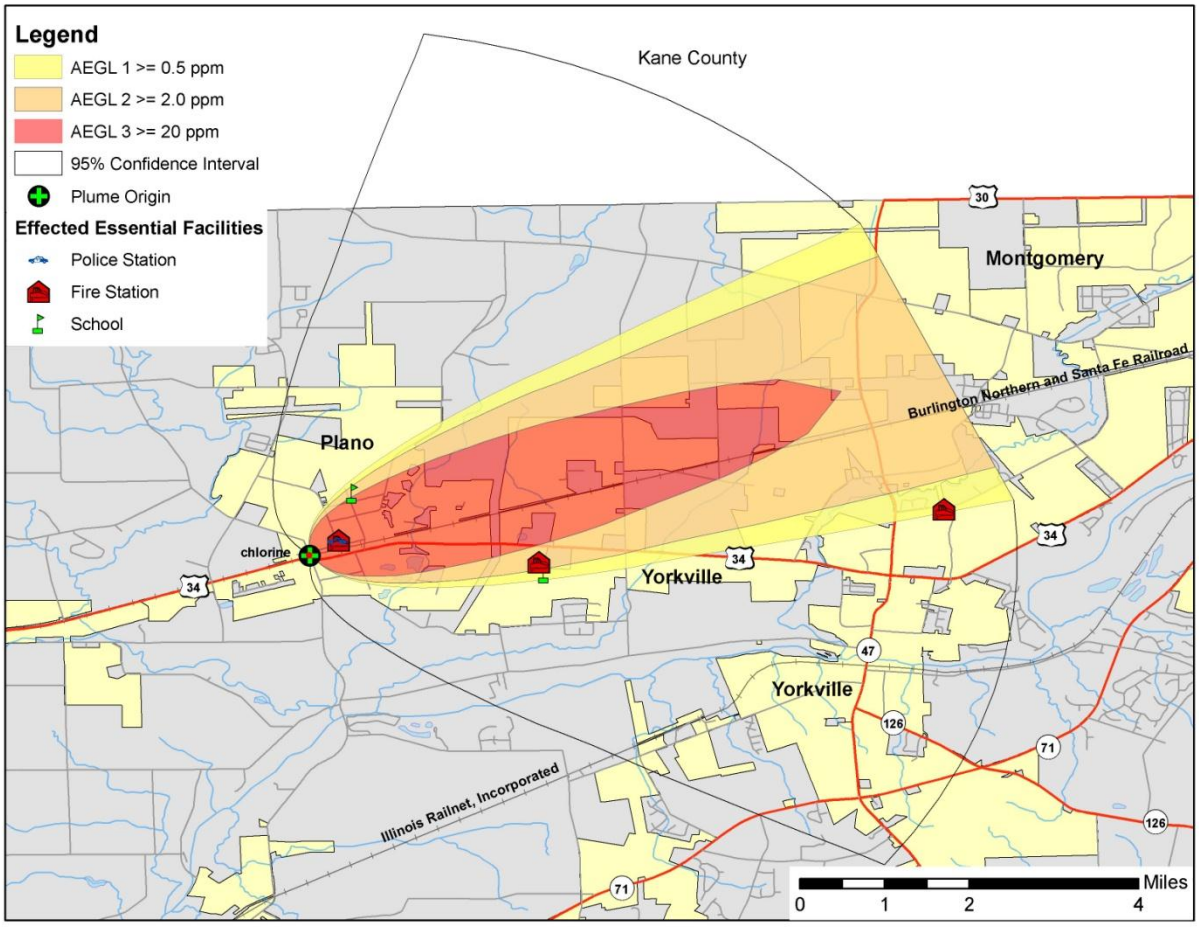
Critical Facilities Damage

There are six critical facilities within the limits of the chemical spill plume. The affected facilities are identified in Table 4-37. Their geographic locations are depicted in Figure 4-17.

Table 4-37: Essential Facilities within Plume Footprint

Name
Fire Stations
Bristol Kendall Fire Station #2
Little Rock Fire Station #3
Little Rock Fox Fire Department #1
Police Stations
Plano Police Department
Schools
Emily G. Johns School
P H Miller Elementary School

Figure 4-17: Essential Facilities within Plume Footprint



Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transport Hazard

Any new development within the county will be vulnerable to these events, especially development along major roadways.

Analysis of Community Development Trends

Because the hazardous material hazard events may occur anywhere within the county, future development will be impacted. The major transportation routes and the industries located in Kendall County pose a threat of dangerous chemicals and hazardous materials release.

4.4.7 Fire Hazard

Hazard Definition for Fire Hazard

This plan will address three major categories of fires for Kendall County: 1) tire/scrap fires; 2) structural fires; and 3) wildfires.

Tire Fires

The state of Illinois generates thousands of scrap tires annually. Many of those scrap tires end up in approved storage sites that are carefully regulated and controlled by federal and state officials. However, scrap tires are sometimes intentionally dumped in unapproved locations throughout the state. The number of unapproved locations cannot be readily determined. These illegal sites are owned by private residents who have been continually dumping waste and refuse, including scrap tires, at those locations for many years.

Tire disposal sites can be fire hazards, in large part, because of the enormous number of scrap tires typically present at one site. This large amount of fuel renders standard firefighting practices nearly useless. Flowing and burning oil released by the scrap tires can spread the fire to adjacent areas. Tire fires differ from conventional fires in the following ways:

- Relatively small tire fires can require significant fire resources to control and extinguish.
- Those resources often cost much more than Kendall County government can absorb compared to standard fire responses.
- There may be significant environmental consequences of a major tire fire. Extreme heat can convert a standard vehicle tire into approximately two gallons of oily residue that may leak into the soil or migrate to streams and waterways.

Structural Fires

Lightning strikes, poor building construction, and building condition are the main causes for most structural fires in Indiana. Kendall County has a few structural fires each year countywide.

Wildfires

When hot and dry conditions develop, forests may become vulnerable to devastating wildfires. In the past few decades an increased commercial and residential development near forested areas has dramatically changed the nature and scope of the wildfire hazard. In addition, the increase in structures resulting from new development strains the effectiveness of the fire service personnel in the county.

Previous Occurrences for Fire Hazard

Kendall County has not experienced a significant or large-scale explosion at a fixed site or transportation route that has resulted in multiple deaths or serious injuries.

Geographic Location for Fire Hazard

Fire hazards occur countywide and therefore affect the entire county. The forested areas in the county have a higher chance of widespread fire hazard.

Hazard Extent for Fire Hazard

The extent of the fire hazard varies both in terms of the severity of the fire and the type of material being ignited. All communities in Kendall County are affected by fire equally.

Risk Identification for Fire Hazard

Based on input from the planning team, a future occurrence of a fire or explosion is possible. According to the RPI, fire/explosion is ranked as the number six hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	1	=	2

Vulnerability Analysis for Fire Hazard

This hazard impacts the entire jurisdiction equally; therefore, the entire population and all buildings within the county are vulnerable to fires and can expect the same impacts within the affected area.

Table 4-9 lists the types and numbers of all essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

The building exposure for Kendall County, as determined from the building inventory, is included in Table 4-10. Because of the difficulty predicting which communities are at risk, the entire population and all buildings have been identified at risk.

Critical Facilities

All critical facilities are vulnerable to fire hazards. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural damage from fire and water damage from efforts extinguishing fire. Table 4-9 lists the types and numbers of essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is provided in Table 4-10. Impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These impacts include structural damage from fire and water damage from efforts to extinguish the fire.

Infrastructure

During a fire the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a fire. Potential impacts include structural damage resulting in impassable roadways and power outages.

Vulnerability to Future Assets/Infrastructure for Fire Hazard

Any future development will be vulnerable to these events.

Analysis of Community Development Trends

Fire hazard events may occur anywhere within the county, because of this future development will be impacted.

Section 5 - Mitigation Strategy

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. The goal of mitigation is to build disaster-resistant communities. Mitigation actions and projects should be based on a well-constructed risk assessment, provided in Section 4 of this plan. Mitigation should be an ongoing process adapting over time to accommodate a community's needs.

5.1 Community Capability Assessment

The capability assessment identifies current activities used to mitigate hazards. The capability assessment identifies the policies, regulations, procedures, programs, and projects that contribute to the lessening of disaster damages. The assessment also provides an evaluation of these capabilities to determine whether the activities can be improved in order to more effectively reduce the impact of future hazards. The following sections identify existing plans and mitigation capabilities within all of the communities listed in Section 2 of this plan.

5.1.1 National Flood Insurance Program (NFIP)

Kendall County, all its jurisdictions are members of the NFIP expect Boulder Hill. Boulder Hill does have an identified flood area but has chosen not to participate due to lack of interest or perceived need. Kendall County will continue to educate this jurisdiction on the benefits of the program.

HAZUS-MH identified approximately 439 structures are located within the Kendall County Special Flood Hazard Area. However, 2,128 households paid flood insurance, insuring $300,563,000 in property value. The total premiums collected amounted to $1,368,412, which on average was $47,186 annually. From 1978 through 2007, 1,142 claims were filed totaling $9,814,877. The average claim was $8,594.

The county and incorporated areas do not participate in the NFIP'S Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: 1) reduce flood losses; 2) facilitate accurate insurance rating; and 3) promote the awareness of flood insurance.

Table 5-1 identifies each community and the date each participant joined the NFIP.

Table 5-1: Additional Information on Communities Participating in the NFIP

Community	Participation Date	FIRM Date	CRS Date	CRS Rating	Floodplain Ordinance
Kendall County	7/19/1982	2/4/2009	NA	NA	12/16/2008
Boulder Hill CDP		2/4/2009	NA	NA	
City of Aurora	6/15/1979	2/4/2009	NA	NA	6/15/1979
City of Plano	9/30/1976	2/4/2009	NA	NA	8/24/1998
City of Sandwich	2/27/1984	2/4/2009	NA	NA	12/2008
The United City of Yorkville	6/1/1982	2/4/2009	NA	NA	2/24/2009
Village of Lisbon	6/11/1982	2/4/2009	NA	NA	
Village of Millbrook	5/13/09	2/4/2009	NA	NA	
Village of Montgomery	8/15/1979	2/4/2009	NA	NA	
Village of Newark	6/1/1982	2/4/2009	NA	NA	
Village of Oswego	9/4/1985	2/4/2009	NA	NA	
Village of Plattville		2/4/2009	NA	NA	

5.1.2 Stormwater Management Stream Maintenance Ordinance

The most recent Stormwater Management Ordinance for Kendall County was enacted in September of 2002. The overall goal of the Stormwater Management Ordinance is to have no change in runoff rate or volume from pre-development conditions. For every development project a stormwater management plan must be created. The stormwater management plan must address the following issues: minimization of increases in runoff volume and rates, water quality and multiple uses, release rates, detention basin outlet design and storage requirements, drainage system design and evaluation, methods of generating runoff hydrographs, wet detention basin design, wetland and dry detention basin design, detention in flood plains, wetland protection, urban area drainage, infiltration practices, and safety an maintenance considerations.

Several other jurisdictions within Kendall County have similar stormwater management ordinances except for the Village of Lisbon and Boulder Hill CDP which is not available.

5.1.3 Zoning Management Ordinance

The first zoning ordinance for Kendall County was passed on January 16, 1940. The Kendall County zoning ordinance was recently revised in October 19, 2010. The overall goal of the zoning ordinance, which still pertains today, is to promote the public health, safety, morals, comfort and the general welfare of the people of Kendall County. The full text of the zoning ordinance for Kendall County can be found on the county website along with several other ordinances. The website also has links to the other jurisdictions within Kendall County. Table 5-2 summarizes these ordinances and their adoption dates within the county.

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Table 5-2: Description of Zoning Plans/Ordinances

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord	Seismic Ord	Bldg. Stndrds
Kendall County	7-21-2009	10/19/2010	10-21-2008	7-2006	9-2002	N/A	N/A	INTL

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord	Seismic Ord	Bldg. Stndrds
Boulder Hill CDP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
City of Plano	7/28/1997	9/4/1962	1962	8/24/1998	8/24/1998	1979*	N/A	INTL
City of Sandwich	1983	1983	1983	N/A	1983	1983	N/A	INTL
City of Yorkville	2008	1994	2004	2003	2010	1976	N/A	INTL
Village of Lisbon	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Millbrook	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Montgomery	2003	8-22-1998	2-1991	12-14-1998	11-14-2000	8-22-1998*	N/A	INTL
Village of Newark	2008	N/A	8-9-06	N/A	N/A	N/A	N/A	INTL
Village of Oswego	2009	11-2009	2-2008	1-15-2008	1-15-2008	11-2009*	N/A	INTL
Village of Plattville	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*The date given is the most recent updated version of that ordinance. *The burning ordinance for these jurisdictions are present within either the zoning ordinance or the subdivision control ordinance.*

5.1.4 Erosion Management Program/ Policy

Kendall County, The United City of Yorkville, Village of Montgomery, and Village of Oswego have plans in place for erosion control and management.

5.1.5 Fire Insurance Rating Programs/ Policy

Table 5-3 lists Kendall County's fire departments and respective information.

Table 5-3: Kendall County Fire Departments, Ratings, and Number of Firefighters

Fire Department	Fire Insurance Rating (ISO)	Number of Firefighters
Bristol Kendall Fire Protection District		
City of Plano	5/8	70
City of Sandwich	4/8	35
Joliet Fire Station	3/9	212
Lisbon-Seward Fire Protection CO 2	9	31
Little Rock Fox Fire Department		
Little Rock Fox Fire Station #2		
Little Rock Fox Fire Station #3		
Newark Fire Protection District	6/9	55
Oswego Fire Protection District	4/9	77
The United City of Yorkville	5/9	77
Village of Millbrook	5/8	
Village of Plattville	9	

5.1.6 Land Use Plan

Kendall County has a land use plan within the zoning ordinance. The cities of Sandwich, Plano and The United City of Yorkville along with the villages of Montgomery and Oswego address land use within their zoning ordinances as well. Village of Millbrook has a Comprehensive Plan that addresses Land Use issues & zoning.

5.1.7 Building Codes

Unincorporated Kendall County uses the International Building Code as their guide for building standards. All other jurisdictions within Kendall County also use the International Building Code except for the Village of Lisbon and Boulder Hill whose building codes are not available.

5.2 Mitigation Goals

In Section 4 of this plan, the risk assessment identified Kendall County as prone to eight hazards. The MHMP planning team members understand that although hazards cannot be eliminated altogether, Kendall County can work toward building disaster-resistant communities. Following are a list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

Goal 1: Lessen the impacts of hazards to new and existing infrastructure

(a) Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

(b) Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

(c) Objective: Minimize the amount of infrastructure exposed to hazards.

(d) Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the community.

(e) Objective: Improve emergency sheltering in the community.

Goal 2: Create new or revise existing plans/maps for the community

(a) Objective: Support compliance with the NFIP.

(b) Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.

(c) Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

Goal 3: Develop long-term strategies to educate community residents on the hazards affecting their county

(a) Objective: Raise public awareness on hazard mitigation.

(b) Objective: Improve education and training of emergency personnel and public officials.

5.3 Mitigation Actions/Projects

Upon completion of the risk assessment and development of the goals and objectives, the planning committee was provided a list of the six mitigation measure categories from the *FEMA State and Local Mitigation Planning How to Guides*. The measures are listed as follows:

- **Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.

- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.

- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.

- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

After Meeting #3, held June 9, 2010, MHMP members were presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The MHMP members brought their mitigation ideas to Meeting #4 which was held August 11, 2010. The evaluation criteria (STAPLE+E) involved the following categories and questions.

Social:

- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Technical:

- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

Administrative:

- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political:

- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?

Legal:

- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolution in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?
- Does the mitigation strategy address continued compliance with the NFIP?

Economic:

- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?
- What proposed actions should be considered but be "tabled" for implementation until outside sources of funding are available?

Environmental:

- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

5.4 Implementation Strategy and Analysis of Mitigation Projects

Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is

important. Some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action.

In Meeting #4, the planning team prioritized mitigation actions based on a number of factors. A rating of high, medium, or low was assessed for each mitigation item and is listed next to each item in Table 5-5. The factors were the STAPLE+E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria listed in Table 5-4.

Table 5-4: STAPLE+E planning factors

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E – Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

For each mitigation action related to infrastructure, new and existing infrastructure was considered. Additionally, the mitigation strategies address continued compliance with the NFIP. While an official cost benefit review was not conducted for any of the mitigation actions, the estimated costs were discussed. The overall benefits were considered when prioritizing mitigation items from high to low. An official cost benefit review will be conducted prior to the implementations of any mitigation actions. Table 5-5 presents mitigation projects developed by the planning committee, as well as actions that are ongoing or already completed. Since this is the first mitigation plan developed for Kendall County, there are no deleted or deferred mitigation items.

Table 5-5: Mitigation Strategies

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Require critical facilities to have weather radios	Goal: Improve emergency communications with the public Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Ongoing	All critical facilities are equipped with weather radios. The county would like to develop a program to distribute weather radios to the public as well and will solicit funding from IEMA and FEMA.
Install stream gauges	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Flood	Kendall County	Ongoing	New stream gauges are being installed on tributaries to Fox River: Little Rock Creek, Big Rock Creek, Blackberry Creek
Establish mutual aid agreements	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Winter Storm, Hazmat	Kendall County	Ongoing	The county has mutual aid agreements in place for hazmat incidents and snow removal.
Create a database for identification of special needs population	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Hazmat, Fire	Kendall County	Ongoing	The county keeps a database for senior citizens with special needs. There are continued attempts to create a similar database for non-senior residents.
Conduct public education regarding nearby nuclear power plant	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Raise public awareness on hazard mitigation.	Hazmat	Kendall County	Ongoing	After 9-11, the county conducted extensive public education.
Build snow fences along roads to mitigate drifting snow	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Winter Storm	Kendall County	Ongoing	All state highways have snow fences. The county would like to build additional snow fences along the following roads: Grover Road, Plainfield Road, Ridge Road, Wolf Road, County Line Road, and Plains Road. Funding will be sought from the highway department and ILDOT. If funding is available, implementation will begin within three years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Develop stormwater management ordinances and plans	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Flood	Kendall County	In Progress	The county has developed a number of stormwater management ordinances (including for Ausable Creek) and updates them on a regular basis. The county will continue to use local resources to develop stormwater management plans for each community.
Establish warming and cooling centers	Goal: Lessen the impacts of hazards on at risk populations. Objective: Improve emergency sheltering in the community.	Drought, Winter Storm	Plano, Sandwich, Yorkville, Montgomery, Oswego	Complete	Kendall County communities are equipped with warming and cooling centers.
Install Reverse 911 for mass notification	Goal: Improve communication to the public. Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Kendall County	Complete	The county has a Reverse 911 system.
Establish a system to alert first responders of emergencies	Goal: Improve First Responder communication. Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Boulder Hill, Plano, Sandwich, Yorkville, Montgomery, Oswego	Complete	First responders in the northern part of the county are alerted by Skywarn in conjunction with Chicago systems.
Establish safe rooms in critical facilities	Goal: Lessen the impacts of hazards to the community. Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Complete	The county has safe rooms in all critical facilities.
Buy out homes in areas that have frequent flooding	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Montgomery	Complete	Homes along Fox River in Montgomery have been bought out.
Institute a buy-out plan for repetitive loss properties in Black Hawk Springs and along Oswego Fox River and Blackberry Creek; move Farnsworth House (historical site) to a new location	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Kendall County	High	The County EMA and Floodplain Managers will oversee the implementation of the project. Funding has not been secured as of 2010 but will be sought from funding sources such as IEMA. Implementation, if funding is available, is forecasted to begin within five years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Purchase transfer switches to provide back-up power to critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	High	The County and other jurisdictions will oversee the implementation of this project. Local resources will be used to determine which facilities should receive generators. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. If funding is available, this project is forecasted to begin within one year.
Establish CERT teams and procure funding for training and equipment	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Drought	Kendall County	High	The County EMA will oversee this project. Funding will be sought from FEMA and IEMA. If funding is available, implementation will begin within one year.
Install lightning suppression, power conditioning, and surge protection in critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Thunderstorm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	High	The County EMA will oversee this project. Funding will be sought from community grants and local resources. If funding is available, implementation will begin within five years.
Implement Nixle for mass media release via e-mail and text messages	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Drought	Kendall County	High	The County EMA will work with first responders to implement Nixle. Funding for public education may be sought from FEMA. If resources are available, implementation will begin within one year.
Establish secure mobile classrooms	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Medium	The County EMA will work with engineers to oversee the implementation of this project. Funding has not been secured as of 2010, but federal, state, and community development grants are possible funding sources. Implementation, if funding is available, will begin within three years.
Improve communications interoperability	Goal: Improve communications between First Responders. Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Kendall County	Medium	The County EMA will oversee implementation of this project. Local resources will be used to develop an interoperability plan. Funding for exercises and training may be sought from state resources. If funding and resources are available, implementation will begin within three years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Procure temporary signage to use during power outages or warn of road closure	Goal: Improve communication with the public. Objective: Equip public facilities and communities with means to guard against damage caused by secondary effects of hazards.	Flood	Kendall County	Medium	The County EMA and County Highway Departments oversee the implementation of this project. Local resources will be used as much as possible and additional funding will be sought from the PDM program. Implementation, if funding is available, is forecasted to begin within three years.
Conduct stream and ditch maintenance along all streams in developed areas of the county	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Flood	Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Medium	The County Engineer will oversee this project. The U.S. Army Corps of Engineers and the DNR are potential funding sources. If funding is available, implementation will begin within three years.
Conduct a commodity flow study	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Hazmat	Kendall County	Medium	The County EMA will work with the highway department to complete this project. Funding will be sought from ILDOT. If funding is available, implementation will begin within three years.
Establish best practices for burying power lines in new subdivisions	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Winter Storm	Kendall County	Low	County officials will establish and document best practices using local resources. If resources are available, implementation will begin within five years.
Procure emergency operation system/switches for traffic signals (manual control)	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Kendall County	Low	The County EMA and County Highway Departments oversee the implementation of this project. Funding will be sought from federal and state agencies. Implementation, if funding is available, is forecasted to begin within five years.
Improve condition of Wolf Road by installing new culverts and/or elevating the road	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Flood	Kendall County	Low	The County Highway Department will oversee this project. Funding will be sought from DNR, FEMA, and IEMA. If funding is available, implementation will begin within five years.
Improve signage and signals at intersections with frequent accidents: 34 and 30; 71 and 34	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Hazmat	Kendall County	Low	The County EMA and County Highway Department oversee the implementation of this project. Funding will be sought from federal and state agencies. Implementation, if funding is available, is forecasted to begin within five years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Develop an evacuation plan for hazmat incidents	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Hazmat	Plano	Low	Plano currently has no evacuation plan. City resources will be used to develop and publicize the plan. If resources are available, implementation will begin within five years.

The Kendall County Emergency Management will be the local champions for the mitigation actions. The County Commissioners and the city and town councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.

5.5 Multi-Jurisdictional Mitigation Strategy

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the nine incorporated communities within and including Kendall County was invited to participate in brainstorming sessions in which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties. All potential strategies and goals that arose through this process are included in this plan. The county planning team used FEMA's evaluation criteria to gauge the priority of all items. A final draft of the disaster mitigation plan was presented to all members to allow for final edits and approval of the priorities.

Section 6 - Plan Maintenance

6.1 Monitoring, Evaluating, and Updating the Plan

Throughout the five-year planning cycle, the Kendall County Emergency Management Agency will reconvene the MHMP planning committee to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held during February 2011 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the need for a special meeting, due to new developments or a declared disaster occurs in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

The committee will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The parties responsible for the various implementation actions will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the county commissioners.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated HAZUS-MH GIS data has been returned to the county for use and maintenance in the county's system. As newer data becomes available, this updated data will be used for future risk assessments and vulnerability analyses.

6.2 Implementation through Existing Programs

The results of this plan will be incorporated into ongoing planning efforts since many of the mitigation projects identified as part of this planning process are ongoing. Kendall County and its incorporated jurisdictions will update the zoning plans and ordinances listed in Table 5-2 as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

6.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the EMA director and forwarded to the MHMP planning committee for discussion. Education efforts for hazard mitigation will be ongoing through the EMA. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of this plan will be maintained in each jurisdiction and in the County EMA Office.

APPENDICES

Glossary of Terms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

B

BFE – Base Flood Elevation

C

CAMEO – Computer-Aided Management of Emergency Operations
CEMA – County Emergency Management Agency
CEMP – Comprehensive Emergency Management Plan
CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act

E

EAP – Emergency Action Plan
ERPG – Emergency Response Planning Guidelines
EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Maps
FIS – Flood Information Study

G

GIS – Geographic Information System

H

HAZUS-MH – **Ha**zards **US**A **M**ulti-**H**azard
HUC – Hydrologic Unit Code

I

IDNR – Illinois Department of Natural Resources
IEMA – Illinois Emergency Management Agency
IDOT - Illinois Department of Transportation

M

MHMP – Multi-Hazard Mitigation Plan

N

NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration

P

PPM – Parts Per Million

R

RPI – Risk Priority Index

S

SPC – Storm Prediction Center
SWPPP – Storm water Pollution Prevention Plan

U

USGS – United States Geological Survey

Appendix A: Multi-Hazard Mitigation Plan Meeting Minutes

IEMA Pre-Disaster Mitigation Plan

Assembly of the Kendall County Planning Team Meeting 1:
Chairman: Terry Tichava, Emergency Management Director
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: March 10, 2010

Meeting Time: 1 pm

Place: Kendall County Sheriff's Office: Public Safety Center, 1102 Cornell Lane, Yorkville, IL

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Megan Carlson	SIUC Geology
Lynette Bergeron	Village of Plattville/Ken Com
Dave Farris	Kencom Public Safetly Dispatch
William Dostor	Plainfield PD
John Konopek	Plainfield PD
Jim Jensen	Oswego PD
Terry Tichava	Kendall Co. EMA
Jeff Spang	Little Rock-Fox Fire Protection District
Jeff Warren	Oswego Fire Protection District
Lowell Mathre	Newark Fire
Michael Hitzemann	Bristol Kendall Fire
Jerry A Dugeon	Kendall Co. PB&Z
Rich Hart	Yorkville PD
Bill King	Sandwich Fire
Joe Gillespie	Kendall Sheriffs/EMA
Mike Doerzaph	Aurora PD
Jonathan Whowell	Plano PD
Tracy Page	Kendall Sheriff/EMA

Introduction to the Pre-Disaster Mitigation Planning Process

The meeting is called to order

Narrative: A power-point presentation was given by Jonathan Remo. He explained that this project is in response to the Disaster Mitigation Act of 2000. The project is funded by a grant awarded by FEMA. A twenty-five percent match will be required from the county to fund this project. The county match will be met by sweat equity and GIS data acquired from the County Assessor's Office. The sweat equity will be an accumulation of time spent at the meetings, on

research assignments, surveys, along with the time spent reviewing and producing the planning document.

Jonathan Remo introduced the Pre-Disaster Mitigation Website to the planning team. A username and password was given to the planning team, which will grant them access to the web site. The web site is used to schedule meetings, post contact information and download material pertaining to the planning process.

Jonathan Remo divided the planning project into five to six meetings. At the 1st meeting, the planning team will review critical facility maps. The planning team will be asked to research and verify the location of all critical facilities within the county. Jonathan stated that public participation is very important throughout the planning process. He explained that all of the meetings are open to the public but there will be a particular effort made to invite the public to the 3rd meeting. At that meeting, the SIUC Geology Department will present historic accounts of natural disasters that have affected this area. At the 2nd meeting the discussion will focus on natural disasters that are relevant to this area. These hazards will be given a probability rating and ranked by their occurrence and potential level of risk. Polis and SIUC Geology will research these hazards and present them to the planning team. The 3rd meeting is publicized in order to encourage public participation. Polis and SIUC Geology will produce a risk assessment in draft form; each planning team member will get a copy. Also they will present strategies and projects that FEMA and other counties have undertaken for the planning team to review. The 4th meeting consists of a brain storming session focused on disasters that were analyzed in the risk assessment report. The Planning Team will list strategies and projects that could be implemented to mitigate the potential hazards that threaten the county. FEMA requires that for every identified hazard, a strategy to mitigate the loss and damage must be in place. The strategies may range from educational awareness to hardening a building or building a levee. After the 4th meeting the plan will be in its final draft form. At the 5th meeting the planning team will need to review the plan prior to sending it to IEMA. IEMA will review the plan and will make recommendation to it as they see fit, then it is submitted to FEMA for review and approval. Once the plan has been submitted to FEMA, local governments are eligible to apply for grants to mitigate these established hazards. After FEMA approves the plan, it is sent back to the Planning Team. At the 6th meeting the Planning Team will present the Pre-Disaster Mitigation Plan to the County Board for adoption. Incorporated communities must either adopt the county plan or prepare its own plan, in order to access mitigation assistance from FEMA. The communities are encouraged to participate and contribute to development of the plan. Once the County Board has adopted the plan, each incorporated community will have the opportunity to adopt the plan as well.

Jonathan Remo then introduced Megan Carlson of SIUC. Megan Carlson presented three maps that identified critical facilities in the county. She asked the planning team to come up to review the maps to identify any corrections that need to be made to the maps. She assigned research homework arranged by categories to individual planning team members to locate missing or incorrect critical facilities.

Meeting was adjourned.

Meeting #1
3-10-10 1pm

HAZARD MITIGATION GRANT PROGRAM (HMGP)

CONTACTS

AGENCY	NAME	EMAIL ADDRESS	PHONE NUMBER
KenCom	Lynette Bergeron	lbergeron@co.kendall.il.us	630-553-0911
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Plainfield PD	John Konopek	JKonopek@plainfieldpd.com	815-439-4803
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Little Rock-Fox Fire Protection Dist.	Jeff Spang	jeff@spang.us	(630) 661-1144
Oswego Fire Protection Dist.	JEFF WARREN	JWARREN@OSWEGOFIRE.COM	630-554-2110
NEWARK FIRE	Lowell MATHRE	NewarkFire@SBCGlobal.Net	815-695-5147
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Kendall Co. PBAZ	Jerry A. Dudgeon	jdudgeon@co.kendall.il.us	630-553-4138
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SANDWICH FIRE	BILL KING	KINGWR@SANDWICHFD.ORG	815-703-4440
Kendall Sheriff's EMA	Joe Gillespie	JGillespie@Co.Kendall.IL.US	630-553-7500 1148
AURORA P.D.	MIKE DOERZAPH	doerzaph@APD.AURORA.IL.US	630.256.3512
PLANO P.D.	JONATHAN WHOWELL	jwhowellplg@yahoo.com	cell 630.669.0743
Kendall Sheriff EMA +	Tracy Page	tpage@co.kendall.il.us	630-553-7500 x1115

& Boulder Hill Montgomery

IEMA Pre-Disaster Mitigation Plan

Assembly of the Kendall County Planning Team Meeting 2:
Chairman: Terry Tichava, Emergency Management Director
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: April 14, 2010

Meeting Time: 1 pm

Place: Kendall County Sheriff's Office: Public Safety Center, 1102 Cornell Lane, Yorkville, IL

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Megan Carlson	SIUC Geology
Stan Laken	Kendall County
Dane Farris	Kencom 911 Emergency Communications
Lowell Mathre	Newark Fire Department
Michael Hitzemann	Bristol-Kendall Fire Department
Lynette Bergeron	Kencom/Village of Plattville
Dave Delaney	Yorkville PD
Donald Schwartzkopf	Yorkville PD
Rich Hart	Yorkville PD
LT Jonathan Whowell	Plano PD
Chief T. Tichava	Kendall SO/EMA
John Konopek	Plainfield PD/EMA
Jerry A. Dudgeon	Kendall County PBC
James Jenson	Oswego PD
William R. King	Sandwich Fire Department
Jeff Spang	Little Rock-Fix Fire Protection District
Tracy Page	Kendall County

The meeting was called to order.

Jonathan Remo began the meeting by re-introducing the objectives of the PDM Planning document. The planning document is mandated as a result of the "Disaster Mitigation Act of 2000". Jonathan stated that the objective of the meeting was to prioritize a list of disasters that are relevant to Kendall County.

Jonathan Remo provided the planning team with a handout to direct the focus of the meeting discussion. As Jonathan began to conduct the prioritizing process, he described the risk assessment ranking that FEMA has established.

Narrative: The Planning Team was then asked to assess and rank the hazards that could potentially befall Kendall County using the risk priority index (RPI). The identified hazards were ranked as followed for Kendall County:

#1: Thunderstorms/High Winds/Hail/Lightening
#2: Tornado
#3: Transportation Hazardous Material Release
#4: Flooding
#5: Winter Storms
#6: Fire/Explosion
#7: Earthquake

Narrative: The planning team was then asked to analyze the historical weather events that have been plotted on a map of the county and communities therein. No corrections were noted by the planning team.

The planning team agreed to complete any missing information pertaining to critical facilities by the next meeting.

Meeting was adjourned.

Meeting #2

HAZARD MITIGATION GRANT PROGRAM (HMGP)
CONTACTS

AGENCY	NAME	EMAIL ADDRESS	PHONE NUMBER
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" "	Rich Hart	rhart@yorkvilleil.us	" "
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SANDWICH FIRE	WILLIAM R. KING	KINGWR@SANDWICHFD.ORG	815-703-4440
LITTLE ROCK-FOX FIRE	Jeff Spang	Jeff@spang.us Plano	630 661-1144
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IEMA Pre-Disaster Mitigation Plan

Assembly of the Kendall County Planning Team Meeting 3:
Chairman: Terry Tichava, Emergency Management Director
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: June 9, 2010

Meeting Time: 1 pm

Place: Kendall County Sheriff's Office: Public Safety Center, 1102 Cornell Lane, Yorkville, IL

Planning Team/Attendance:

Jonathan Remo	SIUC Geology
Beth Ellison	SIUC Geology
Donald P. Scwartzkopf	Yorkville PD
Dave Delaney	Yorkville PD
Matt Schwy	Kendall County Record
Terry Tichava	Kendall County SO/EMA
Jerry H. Dudgeon	Kendall County PBZ
John Sterrett	Kendall County PBZ
Michael Hitzemann	Bristol-Kendall Fire Department
Don Clayton	Kendall County
Jim Jenson	Oswego PD
Jeff Warren	Oswego Fire Department
David Farris	Kencom
Jonathan Whowell	Plano PD
Jeff Spang	Little Rock-Fox FPD
Lynette Bergeron	Kencom/Village of Plattville

The meeting was called to order.

Jonathan Remo opened the meeting with an overview of the planning process and the roles of SIU and the Polis Center. Then he went on to explain the topics and objectives of the current meeting. Jonathan first presented the planning team with the list of hazards that the team had ranked by their level of risk from the previous meeting. He also presented a power point presentation of the history of Kendall County's past disasters. This included covering each hazard that the County had focused on, the history of each and then the mitigation strategies. He defined mitigation as the act of avoidance and preparedness.

A draft of the Kendall County Mitigation Plan and a copy of Mitigation Ideas, produced by FEMA Region 5 in July 2002, were given to each of the planning team members for review. It was explained by Jonathan the contents of the booklet and that each of the planning team members should return to meeting 4 with three mitigation strategies for each of the hazards identified by the planning team.

Jonathan Remo then asked the audience for questions or comment. After some discussion about the plan and how it would affect the community and its residents, he thanked those who came and a closed the presentation.

Meeting was adjourned.

HAZARD MITIGATION GRANT PROGRAM (HMGP)
CONTACTS

AGENCY	NAME	EMAIL ADDRESS	PHONE NUMBER
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Little Rock Fox FPD	Jeff Spang	jeff@spang.us	630 661-1144
KenCom	Lynette Bergeron		

IEMA Pre-Disaster Mitigation Plan

Assembly of the Kendall County Planning Team Meeting 4:
Chairman: Terry Tichava, Emergency Management Director
Plan Directors: SIUC Geology Department and IUPUI – Polis

Meeting Date: August 11, 2010

Meeting Time: 1 pm

Place: Kendall County Sheriff's Office: Public Safety Center, 1102 Cornell Lane, Yorkville, IL

Attendance:

Jonathan Remo	SIUC Geology
Beth Elision	SIUC Geology
John Buechler	IUPUI – Polis
John Sterrett	Kendall County PBZ
Michael Hitzemann	Bristol-Kendall Fire Department
Larry Hilt	Yorkville PD
Joe Gillespie	Kendall County
Dane Farris	Kencom
Lynette Bergeron	Kencom/Village of Plattville
Lowell Mathre	Newark Fire Department
Bill King	Sandwich Fire Department
Don Clayton	Kendall County GIS
Tracy Page	Kendall County
Stan Laken	Kendall County Tech
Terry Tichava	Kendall County SO/EMA
Dave Delaney	Yorkville PD
Jon Whowell	Plano PD
James Jenson	Oswego PD
Jeff Spang	Little Rock-Fox FPD

The meeting was called to order.

Jonathan Remo thanked everyone for attending the meeting and stated that if the planning team members needed extra mitigation strategy handbooks that they were available upon request. He introduced John Buechler from the Polis Center that was in attendance that day also.

Jon Remo began by explaining that today's meeting would cover mitigation strategies that the planning team believed would prevent or eliminate the loss of life and property. He explained that the planning team should not make any reservations in the form of money or resources when developing this list. John Buechler stepped in to direct the mitigation ideas brainstorming period. Whenever possible, the planning team was directed to be specific about the location or focus area of a strategy, in respect to being within a municipality or county wide. Each hazard was addressed one at a time. The planning team listed new and current on-going mitigation

strategies in respect to each hazard. The planning team prioritized mitigation actions based on a number of factors. A rating of High, Medium, or Low was assessed for each mitigation item. Listed below are the New Mitigation Strategies that the Planning Team came up with:

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority
Require critical facilities to have weather radios	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Ongoing
Install stream gauges	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Flood	Kendall County	Ongoing
Establish mutual aid agreements	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Winter Storm, Hazmat	Kendall County	Ongoing
Create a database for identification of special needs population	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Hazmat, Fire	Kendall County	Ongoing
Conduct public education regarding nearby nuclear power plant	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Raise public awareness on hazard mitigation.	Hazmat	Kendall County	Ongoing
Build snow fences along roads to mitigate drifting snow	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Winter Storm	Kendall County	Ongoing
Develop stormwater management ordinances and plans	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Flood	Kendall County	In Progress
Establish warming and cooling centers	Goal: Lessen the impacts of hazards on at risk populations. Objective: Improve emergency sheltering in the community.	Drought, Winter Storm	Plano, Sandwich, Yorkville, Montgomery, Oswego	Complete

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority
Install Reverse 911 for mass notification	Goal: Improve communication to the public. Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Kendall County	Complete
Establish a system to alert first responders of emergencies	Goal: Improve First Responder communication. Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Thunderstorm	Boulder Hill, Plano, Sandwich, Yorkville, Montgomery, Oswego	Complete
Establish safe rooms in critical facilities	Goal: Lessen the impacts of hazards to the community. Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Complete
Buy out homes in areas that have frequent flooding	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Montgomery	Complete
Institute a buy-out plan for repetitive loss properties in Black Hawk Springs and along Oswego Fox River and Blackberry Creek; move Farnsworth House (historical site) to a new location	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Kendall County	High
Purchase transfer switches to provide back-up power to critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	High
Establish CERT teams and procure funding for training and equipment	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Drought	Kendall County	High
Install lightning suppression, power conditioning, and surge protection in critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Thunderstorm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	High
Implement Nixle for mass media release via e-mail and text messages	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Drought	Kendall County	High
Establish secure mobile classrooms	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Kendall County, Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Medium

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority
Improve communications interoperability	Goal: Improve communications between First Responders. Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire	Kendall County	Medium
Procure temporary signage to use during power outages or warn of road closure	Goal: Improve communication with the public. Objective: Equip public facilities and communities with means to guard against damage caused by secondary effects of hazards.	Flood	Kendall County	Medium
Conduct stream and ditch maintenance along all streams in developed areas of the county	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Flood	Boulder Hill, Plano, Sandwich, Yorkville, Lisbon, Montgomery, Newark, Oswego	Medium
Conduct a commodity flow study	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Hazmat	Kendall County	Medium
Establish best practices for burying power lines in new subdivisions	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Winter Storm	Kendall County	Low
Procure emergency operation system/switches for traffic signals (manual control)	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Kendall County	Low
Improve condition of Wolf Road by installing new culverts and/or elevating the road	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Flood	Kendall County	Low
Improve signage and signals at intersections with frequent accidents: 34 and 30; 71 and 34	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Hazmat	Kendall County	Low
Develop an evacuation plan for hazmat incidents	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Hazmat	Plano	Low

HAZARD MITIGATION GRANT PROGRAM (HMGP)
CONTACTS

AGENCY	NAME	EMAIL ADDRESS	PHONE NUMBER
Kendall Co PBZ	John Sterrett	JSTERRETT@co.kendall.il.us	630-553-4141
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Yorkville P.D.	Larry Hilt	LHILT@YORKVILLE.IL.US	630-553-4340
Kendall Co.	Joe Gillespie		
KenCom	Dave Farris		
KenCom	Lynette Bergeron	Lbergeron@co.kendall.il.us	630-553-0911
Newark Fire	Lowell Maytore	NewarkFire@sbcGlobal.NET	815-695-5847
Sandwich Fire	Bill King	KINGWR@SANDWICHFD.ORG	815-703-4440
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IEMA Pre-Disaster Mitigation Plan

Assembly of the Kendall County Planning Team Meeting 5:
Chairman: Terry Tichava, Emergency Management Director
Plan Directors: SIUC Geology Department and IUPUI – Polis

Meeting Date: October 13, 2010

Meeting Time: 1 pm

Place: Kendall County Sheriff's Office: Public Safety Center, 1102 Cornell Lane, Yorkville, IL

Planning Team/Attendance:

Lynette Bergeron	Kencom/Village of Plattville
Cpt. James Jenson	Oswego PD
D.C. Dave Delaney	Yorkville PD
Chief Rich Hart	Yorkville PD
Lt. Don Schwartkopf	Yorkville PD
D.C. Larry Hilt	Yorkville PD
Terry Tichava	Kendall County EMA
Jeff Spang	LRFFPD
Bill Perkins	Oswego FPA
Dave Farris	Kencom
Don Clayton	Kendall County GIS
Stan Laken	Kendall County Technical
Tracy Page	Kendall EMA
Joe Gillespie	Kendall EMA
Jackie Lemmerhirt-Kowalski	Village of Millbrook
John Sterrett	Kendall PBZ

The meeting was called to order.

Terry Tichava opened the meeting with an overview of what was to happen from this point on with the plan. He stated that the plan could be reviewed by the Planning Team members for about 2 weeks so everyone would have ample amount of time look at and review the plan for any discrepancies. He also stated that in approximately 3 weeks the plan would be sent to IEMA/FEMA. They would then review it and if everything is OK with the plan, then we should hear back from IEMA/FEMA hopefully by October for their approval.

Terry then explained that once it comes back approved, then a Resolution will have to be passed by all municipalities. After they are passed, they needed to be returned Terry and he will forward them on to FEMA. Once FEMA gets the Resolutions, they will send notification that the municipality has a completed and approved plan.

He also explained that once the plan is submitted to IEMA/FEMA for their review, the municipalities can begin formulating and putting together their projects for funding. .

It was also explained to the planning team that FEMA will require a five-year update to the plan. Terry told the planning team that in another five years, the members should come together again, most likely under the direction of the ESDA Director, to review the plan and make any necessary changes to it. He explained that FEMA will probably send out a reminder as to when this is supposed to take place.

After Terry explained the above process, he pointed out specific tables and places in the plan that needed clarification from the team members. After discussing a few changes, the planning team members looked at the plan for a while longer.

Since there were no more comments about the plan, the meeting was adjourned.

HAZARD MITIGATION GRANT PROGRAM (HMGP)
CONTACTS

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Millbrook	Jackie Lemmerhirt-Kawicki	jackie@borlanorth.com	
Kendall PBZ	John Sterrett	JSterrett@co.kendall.il.us	630-553-4834

Appendix B: Local Newspaper Articles and Photographs

Multi Hazard committee will hold planning session

The Kendall County Multi-Hazard Mitigation Steering Committee will host a public information and strategy planning session at 1 p.m. on Wednesday, June 9 at the Kendall County Sheriff's Office, 1102 Cornell Lane, Yorkville.

Through a grant, Kendall County Emergency Management Agency has formed an alliance with The Polis Center of Indiana University-Purdue University Indianapolis (IUPUI) and Southern Illinois University-Carbondale to identify potential natural hazards and to produce a mitigation plan to address the issues.

The ongoing efforts of the partnership will result in a Multi-Hazard Mitigation Plano (MHMP), which will seek to identify potential natural hazards for Kendall County, and then establish a mitigation measure that is intended to reduce or eliminate the negative impact that a particular hazard may have on the locality.

Over the last several months the steering committee has been working with The Polis Center and staff from the SIU-Carbondale Geology Department of develop a Multi-Hazard Mitigation Plan (MHMP) for the county to submit to the Federal Emergency Management Agency for approval.

The Federal Emergency Management Agency (FEMA) now requires each unit of government in the United States to have a FEMA-approved MHMP.

The MHMP will serve as framework for developing hazard mitigation projects that will reduce the negative impacts of future disasters on the communities and unincorporated areas of the county. Examples of projects that have been completed by some communities include storm shelters, warning sirens, flood walls, and fire protection enhancements.

The steering committee has identified the following hazards: tornadoes, thunderstorms/hi winds/hail, hazardous materials release, drought/extreme heat, and severe winter storms. The committee then selected hazards for The Polis Center to model with HAZUS-MH, a GIS-based risk mitigation tool developed by FEMA. HAZUS-MH is capable of predicting the probable impacts of specific disasters in terms of financial, human life, and safety impacts, as well as various others.

Once the plan is completed, the committee will submit it to FEMA for approval. The committee will also work to develop funding for any mitigation activities that are identified.

The public is invited to attend the June 9 meeting and the steering committee is interested in receiving public input on the plan.

Appendix C: Adopting Resolutions

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Kendall County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, Kendall County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Kendall County Commissioners hereby adopt the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Kendall County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
County Commissioner Chairman

_____
County Commissioner

_____
County Commissioner

_____
Attested by: County Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Boulder Hill CDP recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, Boulder Hill CDP participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, Boulder Hill CDP hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

_____
City Council Member

_____
City Council Member

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City Council Member

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City Council Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Aurora recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Aurora participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Aurora hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

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City Council Member

_____
City Council Member

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City Council Member

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City Council Member

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Attested by: City Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Lisbon recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Lisbon participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Lisbon hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Service and Disaster Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

_____
Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Millbrook recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Millbrook participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Millbrook hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Service and Disaster Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Montgomery recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Montgomery participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Montgomery hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Service and Disaster Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Newark recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Newark participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Newark hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Service and Disaster Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Oswego recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Oswego participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Oswego hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Service and Disaster Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

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Attested by: Village Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Plano recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Plano participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Plano hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Plattville recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Plattville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Plattville hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Service and Disaster Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Emergency Management and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Sandwich recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Sandwich participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Sandwich hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE KENDALL COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, The United City of Yorkville recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, The United City of Yorkville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that The United City of Yorkville hereby adopts the Kendall County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the Kendall County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2010.

_____
City Mayor

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
City Council Member

_____
Attested by: City Clerk

Appendix D: NCDC Historical Hazards

Kendall County Picture Index

FLOOD

File Name: Flood_1954_Plano_1
Event: Flood
Date: October 26, 1954
Description: Flood Causes Thousands of dollars of damage to Plano Disposal Plant. The torrential rain of 10 inches on the weekend of October 9 and 10 and the subsequent flood caused serious damage to the Plano disposal plant. Photo shows how the plant was surrounded by water when the creek poured over its bank.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Flood_1954_Plano_2
Event: Flood
Date: October 26, 1954
Description: Flood Causes Thousands of dollars of damage to Plano Disposal Plant. The torrential rain of 10 inches on the weekend of October 9 and 10 and the subsequent flood caused serious damage to the Plano disposal plant. Photo shows the collapsed wall of the plant. The damage has been estimated between $40,000 and $70,00. Cities officials are now seriously pondering the problem…
Source: Kendall County Record AND Kendall County Historical Society

File Name: Flood_1857_Aurora
Event: Flood
Date: February 5, 1857
Description: Looking west from east bank of Fox River after the flood of February 5, 1857. No. 1 was new Wilder House; No. 2 was Wm. A. Tanner house, now our Museum; No. 3 was original Episcopal Church; No. 4, the D. Valentine house; No. 5, the old swimming hole on Stalp Island; No. 6. B.F. Hall residence; No. 7, Millrace; No. 8, old ice house.
Source: "The Aurora story" written and compiled by Vernon Derry for the Aurora Bicentennial Commission Found at Yorkville Public Library

File Name: Flood_1857_Aurora_2
Event: Flood
Date: February 5, 1857
Description: Flood of 1857 covered Island, looking west from foot of old Main street (East Galena Blvd.) Eagle Mills was on site of Leath & Co. Arro points to original Church on Sacred heart. Aurora's first substantial Catholic Church building (1855-1869). After a bad fire, the parish built St. Mary's.
Source: "The Aurora story" written and compiled by Vernon Derry for the Aurora Bicentennial Commission Found at Yorkville Public Library

File Name: Flood_1857_Aurora_3
Event: Flood
Date: February 5, 1857
Description: Looking west downtown Aurora during flood of 1857 which inundated entire Stolp Island with water and ice. Blackhawk Mill was on site of present YWCA building. Note first story of Woodworth Wagon Works (arrow) under construction.
Source: "The Aurora story" written and compiled by Vernon Derry for the Aurora Bicentennial Commission Found at Yorkville Public Library

File Name: Flood_1887_Kendall
Event: Flood
Date: 1887
Description: Floods in Fox River damaged North Avenue bridge in 1887
Source: "The Aurora story" written and compiled by Vernon Derry for the Aurora Bicentennial Commission Found at Yorkville Public Library

File Name: Flood_1937_Yorkville
Event: Flood
Date: 1937
Description: Yorkville fireman pump water out of the old millrace on the Blackberry Dam in this 1937 photo (Photo courtesy of Duane Hayden)
Source: A Pictorial History of Yorkville, Illinois 1836-1968 Volume 1 Found at Yorkville Public Library

WINTER STORM

File Name: Snow_1943_Inscho
Event: Snow storm
Date: January, 1943
Description: A blizzard in January, 1943 left the Inscho School building surround by snow- and classes cancelled (Photo courtesy of Dorothy Chambers)
Source: A History of Yorkville, Illinois 1836-1936 by Lucinda Tio and Kathy Farren Published for Yorkvill's Sesquicentennial July, 1986 Found at Yorkville Public Library

File Name: Snow_1967_Kendall_1
Event: Snow storm
Date: January 27, 1967
Description: Snow piled up to unbelievable heights during the 1967 storm. Downtown Yorkville faced some tough parking problems when the snow was cleared off Rt. 47 onto the curbs.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Snow_1977_Kendall_2
Event: Snow storm
Date: January 27, 1967
Description: Snow piled up to unbelievable heights during the 1967 storm. Art Thanepohn, then Kendall Township Highway Commissioner, provided us with this picture showing just how much snow he and his crews moved off area roads.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Snow_1918_Kendall
Event: Snow storm
Date: 1918
Description: This view of a Fox and Illinois Union Railroad train with a snow attachment is from the collection of Gerbart Bierts. The snowy wither shown is a 1918 storm.
Source: Kendall County Record AND Kendall County Historical Society

TORNADO

File Name: Tornado_1968_Kendall_1
Event: Tornado
Date: May 15, 1968
Description: Damage was severe in Prairie View subdivision where most of the houses suffered some sort of damage
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_2
Event: Tornado
Date: May 15, 1968
Description: Damage was severe in Praire View subdivision where most of the houses suffered some sort of damage
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_3
Event: Tornado
Date: May 15, 1968
Description: Garage ruined in Yorkville
Source: Kendall County Record AND Kendall County Historical Society

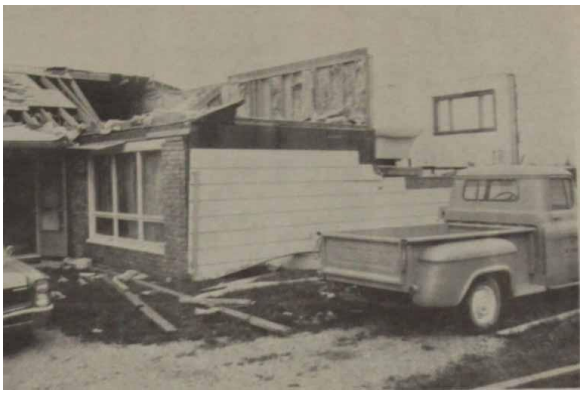
File Name: Tornado_1968_Kendall_4
Event: Tornado
Date: May 15, 1968
Description:
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_5
Event: Tornado
Date: May 15, 1968
Description: A freak of a storm. Albert Wykes points to a bean stock that pierced this tree on his property. The stalk blew from a field across the road. It is so imbedded that it is impossible to pull out.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_6
Event: Tornado
Date: May 15, 1968
Description: Paragon Pluming on Route 34 west of Plano lost the back end of its building to the storm. This portion of the building M. and Mrs. William Puckett, owners of the business, had stored a valuable collection of antiques. The wall on the left collapsed on them.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_7
Event: Tornado
Date: May 15, 1968
Description: About 100 pigs were lost when this barn collapsed from the wind pressure.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_8
Event: Tornado
Date: May 15, 1968
Description: This new bart is on Kennedy Road east of Route 47
Source: Kendall County Record AND Kendall County Historical Society



File Name: Tornado_1968_Kendall_9
Event: Tornado
Date: May 15, 1968
Description: This home is in the Schumacher subdivision
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_10
Event: Tornado
Date: May 15, 1968
Description: In Yorkville this tree split two ways. One part hit the house and the other pit the car.
Source: Kendall County Record AND Kendall County Historical Society

File Name: Tornado_1968_Kendall_11
Event: Tornado
Date: May 15, 1968
Description: This is a section of a roof of a house in Rock Creek. The neighbors roof can be seen on the roof of a home across the street.
Source: Kendall County Record AND Kendall County Historical Society

THUNDERSTORM/HAIL/WIND

File Name: Hail_1965_Plano_1
Event: Hail/Wind
Date: August 1965
Description: 100 M.P.H wind, rain, hail storm lashes Plano and surrounding area
Source: Kendall County Record AND Kendall County Historical Society

File Name: Hail_1965_Plano_2
Event: Hail/Wind
Date: August 1965
Description: 100 M.P.H wind, rain, hail storm lashes Plano and surrounding area
Source: Kendall County Record AND Kendall County Historical Society

File Name: Hail_1965_Plano_3
Event: Hail/Wind
Date: August 1965
Description: 100 M.P.H wind, rain, hail storm lashes Plano and surrounding area
Source: Kendall County Record AND Kendall County Historical Society

File Name: Hail_1965_Plano_4
Event: Hail/Wind
Date: August 1965
Description: 100 M.P.H wind, rain, hail storm lashes Plano and surrounding area
Source: Kendall County Record AND Kendall County Historical Society

FIRE

File Name: Fire_1887_Yorkville
Event: Fire
Date: March, 1887
Description: The Courthouse after the fire in March, 1887
Source: Kendall County Record AND Kendall County Historical Society

File Name: Fire_1972_Yorkville
Event: Fire
Date: October 1972
Description: $ 500,000 fire in Yorkville. Spectacular Blaze destroys box factory
Source: Kendall County Record AND Kendall County Historical Society

File Name: Fire_1972_Yorkville_2
Event: Fire
Date: October 1972
Description: $ 500,000 fire in Yorkville. Spectacular Blaze destroys box factory
Source: Kendall County Record AND Kendall County Historical Society

OTHER

File Name: Train_1970_Kendalll
Event: Freight Train Derailment
Date: July 1970
Description: Freight Train Derailed
Source: Kendall County Record AND Kendall County Historical Society

File Name: DamFailure_1978_Yorkville
Event: Dam Failure
Date: April 10, 1978
Description: The United City of Yorkville crews faced a tough job on April 10, 1978 when they had to repair a water leak under the river. A temporary dam was built across part of the river and Bristo-Kendall fireman helped pump water away from the area being repaired (Photo courtesy of the city)
Source: A Pictorial History of Yorkville, Illinois 1836-1968 Volume 1 Found at Yorkville Public Library

File Name: Train_1970_Yorkville_1
Event: Train Derailment
Date:
Description: Looking south of Main Street, this photo shows how fr off the tracks some of the derailed cars landed. (Photo courtesy of Lew Riley)
Source: A Pictorial History of Yorkville, Illinois 1836-1968 Volume 1 Found at Yorkville Public Library

File Name: Train_1970_Yorkville_2
Event: Train Derailment
Date: 1970
Description: Derailed train cars narrowly missed hitting the side of Haggerty's Department Store on Bridge Street. (Photo courtesy of Lew Riley)
Source: A Pictorial History of Yorkville, Illinois 1836-1968 Volume 1 Found at Yorkville Public Library

File Name: Train_1970_Yorkville_3
Event: Train Derailment
Date: 1970
Description: Track was torn up along the side of Haggerty's Store when the train derailed in 1970. (Photo courtesy of Lew Riley)
Source: A Pictorial History of Yorkville, Illinois 1836-1968 Volume 1 Found at Yorkville Public Library

File Name: Train_1970_Yorkville_4
Event: Train Derailment
Date: 1970
Description: One of the derailed cars slammed into the front of the Wunsch Clinic. (Photo courtesy of Lew Riley)
Source: A Pictorial History of Yorkville, Illinois 1836-1968 Volume 1 Found at Yorkville Public Library

Appendix E: Historical Hazard Maps

-see attached map.

Appendix F: List of Critical Facilities

Communication Facilities Report

ID	Name	Address	City	Class	Owner	Function	ReplaCost
1	WQDZ709	FRAZIER ROAD, 1 MILE WEST	PLANO	CDFLT	A BEEP, LLC		0
2	WQDZ709		PLANO	CDFLT	A BEEP, LLC		0
3	WQKI908	2 MILES SOUTH OF RT.52 IN SEWARD TOWNSHI	SEWARD TOWNSHIP	CDFLT	A BEEP, LLC		0
4	WQKI908		SEWARD TOWNSHIP	CDFLT	A BEEP, LLC		0
5	KNKG720	10916 Walker Road	YORKVILLE	CDFLT	AMS Spectrum Holdings, LL		0
6	KNKH915	10916 WALKER ROAD	YORKVILLE	CDFLT	AMS Spectrum Holdings, LL		0
7	KSC271	2 3/4 MI SE	SANDWICH	CDFLT	ANR PIPELINE COMPANY		0
8	KSD80	2.75 MI SE OF	SANDWICH	CDFLT	ANR PIPELINE COMPANY		0
9	KSD90	5 1/4 MI SE OF	AURORA	CDFLT	ANR PIPELINE COMPANY		0
10	KOF387	CORNER OF RT 52 & COUNTY LINE RD	MINOOKA	CDFLT	BERNHARD, LEO		0
11	WQIY949	BNSF LS1 MP43.8 HBD	Bristol	CDFLT	BNSF Railway Co		0
12	WPJY795	RAILROAD MILEPOST 43.8	BRISTOL	CDFLT	BNSF Railway Company		0
13	WQDM412		Yorkville	CDFLT	Bristol Kendall Fire Prot		0
14	WQDM412		Yorkville	CDFLT	Bristol Kendall Fire Prot		0
15	WQDM412		Yorkville	CDFLT	Bristol Kendall Fire Prot		0
16	WQDM412		Yorkville	CDFLT	Bristol Kendall Fire Prot		0
17	WQKY556		YORKVILLE	CDFLT	BRISTOL KENDALL FIRE PROT		0
18	WPJX890	9274 GALENA RD	BRISTOL	CDFLT	BRUCHER & RICKLEFF BROS I		0
19	WPJX890		BRISTOL	CDFLT	BRUCHER & RICKLEFF BROS I		0
20	KNGH613	.7 S OF IL RT 71 ON IL RT 47	YORKVILLE	CDFLT	BRUMMEL, RICHARD A		0
21	WNVW548	RT 30 & RT 34	OSWEGO	CDFLT	CANNONBALL MECHANICAL INC		0
22	WNVW548		OSWEGO	CDFLT	CANNONBALL MECHANICAL INC		0
23	KAS496	AURORA PLANT BLDG G RT 31	AURORA	CDFLT	CATERPILLAR OF DELAWARE I		0
24	KD42242			CDFLT	CATERPILLAR OF DELAWARE I		0
25	KD43452			CDFLT	CATERPILLAR OF DELAWARE I		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
26	KFH244	RT 31 1/2 MI S OF RT 30	AURORA	CDFLT	CATERPILLAR OF DELAWARE I		0
27	KFH244		AURORA	CDFLT	CATERPILLAR OF DELAWARE I		0
28	KTF583	IL RT 31 1/2 MI S OF RT 30	AURORA	CDFLT	CATERPILLAR OF DELAWARE I		0
29	WNUB208			CDFLT	CATERPILLAR OF DELAWARE I		0
30	WNXC682			CDFLT	CATERPILLAR OF DELAWARE I		0
31	WPKZ226	RT 31 .2 KM S OF RT 30	AURORA	CDFLT	CATERPILLAR OF DELAWARE I		0
32	WPXJ707		AURORA	CDFLT	CATERPILLAR OF DELAWARE,		0
33	WPXJ707		YORKVILLE	CDFLT	CATERPILLAR OF DELAWARE,		0
34	WPXJ707		PLANO	CDFLT	CATERPILLAR OF DELAWARE,		0
35	WHA590	DOUGLAS RD	OSWEGO	CDFLT	Chicago Comnet Corp		0
36	KNKA549	10916 WALKER RD	YORKVILLE	CDFLT	Chicago SMSA LP		0
37	KNKA549	1650 W RT 126	PLAINFIELD	CDFLT	Chicago SMSA LP		0
38	KNKA549	7335 Rt. 71	Yorkville	CDFLT	Chicago SMSA LP		0
39	WQGK977	Ridge Road Water Tower	Joliet	CDFLT	City of Joliet		0
40	WQFU769		PLANO	CDFLT	CITY OF PLANO IL		0
41	WQLB997	280 State Route 31	Oswego	CDFLT	CLEARWIRE SPECTRUM HOLDIN		0
42		142 Kirkland CIR	Oswego	CDFLT	CLEARWIRE SPECTRUM HOLDIN		0
43	WPPY924			CDFLT	COMBINED AGENCY RESPONSE		0
44	WPQQ636	11440 Corniels Road	Plano	CDFLT	COMMONWEALTH EDISON COMPA		0
45	WPSH227	1301 No County Line Rd	Minooka	CDFLT	COMMONWEALTH EDISON COMPA		0
46	WSS47	11440 CORNIELS RD	PLANO	CDFLT	COMMONWEALTH EDISON COMPA		0
47	WPSH227	1301 No County Line Rd	Minooka	CDFLT	COMMONWEALTH EDISON COMPA		0
48	WQEL763	Corner of Rt 52 and County Line Rd	Minooka	CDFLT	COOK DUPAGE TRANSPORTATIO		0
49	WQEL763		Minooka	CDFLT	COOK DUPAGE TRANSPORTATIO		0
50	WPTG391		YORKVILLE	CDFLT	COUNTRYSIDE VETERINARY CL		0
51	WQGV722	1401 COUNTY LINE ROAD	MINOOKA	CDFLT	DYNEGY IT INC.		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
52	WQGV722		MINOOKA	CDFLT	DYNEGY IT INC.		0
53	WPIK959	2 MI S OF RT 52	SEWARD TOWNSHIP	CDFLT	ESP Wireless Technology G		0
54	WPIK959		SEWARD TOWNSHIP	CDFLT	ESP Wireless Technology G		0
55	WPBB463	2 MILES SOUTH OF RT.52 IN SEWARD TOWNSHI	SEWARD TOWNSHIP	CDFLT	FCI 900, Inc.		0
56	WPBB463		SEWARD TOWNSHIP	CDFLT	FCI 900, Inc.		0
57	WPTU725	2 MILES SOUTH OF RT.52 IN SEWARD TOWNSHI	SEWARD TOWNSHIP	CDFLT	FCI 900, INC.		0
58	WPTU725		SEWARD TOWNSHIP	CDFLT	FCI 900, INC.		0
59	WPWF734	RT 52 and County Line Rd	Minooka	CDFLT	FCI 900, Inc.		0
60	WPWF734		Minooka	CDFLT	FCI 900, Inc.		0
61	WPWF782	2 Miles S of RT 52	Minooka	CDFLT	FCI 900, Inc.		0
62	WPWF782		Minooka	CDFLT	FCI 900, Inc.		0
63	WQHW626	280 State Route 31	Oswego	CDFLT	FCI 900, INC.		0
64	WQHW626		Oswego	CDFLT	FCI 900, INC.		0
65	WQHW716	6849 Rt. 34	Oswego	CDFLT	FCI 900, INC.		0
66	WQHW716		Oswego	CDFLT	FCI 900, INC.		0
67	WQHW965	9316 Rte 34	Yorksville	CDFLT	FCI 900, INC.		0
68	WQHW965		Yorksville	CDFLT	FCI 900, INC.		0
69	WQHX209	"Lot 4, Kendall Point Business	Oswego	CDFLT	FCI 900, INC.		0
70	WQHX209		Oswego	CDFLT	FCI 900, INC.		0
71	WPYR436	Corner of Rt 52 and County Line Rd	Minooka	CDFLT	Ferrari Equipment Company		0
72	WPYR436		MINOOKA	CDFLT	Ferrari Equipment Company		0
73	WPJS421	1215 DEER ST	YORKVILLE	CDFLT	First Student, Inc.		0
74	WPJS421		YORKVILLE	CDFLT	First Student, Inc.		0
75	WPLE455	JCT OF RT 34 & WOLF CROSSING	OSWEGO	CDFLT	FOX BEND GOLF COURSE		0
76	WPLE455		OSWEGO	CDFLT	FOX BEND GOLF COURSE		0
77	KYX872	RT 31 S	OSWEGO	CDFLT	FOX METRO WATER RECLAMATI		0
78	WPUE362	1179 Wolf Rd	Oswego	CDFLT	Frieders, Donald K		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
79	WPUE362		Oswego	CDFLT	Frieders, Donald K		0
80	KNIX538	PRATT RD 1 MI W	PLANO	CDFLT	FRIEDERS, GENE		0
81	WQFK332		OSWEGO	CDFLT	GAP INC		0
82	WNSK382	2 MI S OF RT 52	MINOOKA	CDFLT	GRAINCO FS INC		0
83	WNSK382		MINOOKA	CDFLT	GRAINCO FS INC		0
84	WQEH624	2353 CREEK RD	PLANO	CDFLT	HINSDALE NURSERIES INCORP		0
85	WQEH624		PLANO	CDFLT	HINSDALE NURSERIES INCORP		0
86	WQHD876	3080 Route 34	Oswego	CDFLT	HOME DEPOT U.S.A., INC.		0
87	WQIU818	735 EDWARD LANE	YORKVILLE	CDFLT	HOME DEPOT U.S.A., INC.		0
88	WPKG583	91 M W OF LEGION RD AT EMMANUEL	YORKVILLE	CDFLT	Illinois Public Safety Ne		0
89	KNIF498	13608 FOX RD	PLANO	CDFLT	ILLINOIS, STATE OF		0
90	KVQ604	SILVER SPRINGS STATE PARK 2 MI S	PLANO	CDFLT	ILLINOIS, STATE OF		0
91	WQHG919	FRAZIER RD 1MI W	PLANO	CDFLT	ILLINOIS-CENTRAL SCHOOL B		0
92	WQHG919		PLANO	CDFLT	ILLINOIS-CENTRAL SCHOOL B		0
93	KSA358			CDFLT	KENDALL, COUNTY OF		0
94	KSA358	COURT HOUSE RIDGE & MADISON STS	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
95	KSA358	COUNTY JAIL MAIN & MADISON STS	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
96	WNXD763	COR OF LEGION RD AND EMMANUEL RD	KENDALL TOWNSHIP	CDFLT	KENDALL, COUNTY OF		0
97	WNXD763		KENDALL TOWNSHIP	CDFLT	KENDALL, COUNTY OF		0
98	WNXJ276	COR OF LEGION RD AND EMMANUEL RD	KENDALL TOWNSHIP	CDFLT	KENDALL, COUNTY OF		0
99	WNXJ276		KENDALL TOWNSHIP	CDFLT	KENDALL, COUNTY OF		0
100	WNXJ276	1580 ROUTE 34	OSWEGO	CDFLT	KENDALL, COUNTY OF		0
101	WNYS788	300 FT W OF INT LEGION & EMMANUL RDS	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
102	WNYS788		YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
103	WPAK257			CDFLT	KENDALL, COUNTY OF		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
104	WPAK294	300 FT W OF INT OF LEGION & EMMANUAL RDS	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
105	WPAK294		YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
106	WPBI878	1102 CORNELL ST	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
107	WPBI878		YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
108	WPWW497		YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
109	WPWW499	LEGION ROAD, 350 FT WEST OF IMMANUAL RD	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
110	WPWW499	1102 CORNEL LANE	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
111	WPWW499		YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
112	WPWW499	1580 ROUTE 34	OSWEGO	CDFLT	KENDALL, COUNTY OF		0
113	WQLD369	804 W JOHN ST	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
114	WQLD369		YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
115	WQU458	1102 CORNELL LN	YORKVILLE	CDFLT	KENDALL, COUNTY OF		0
116	WNVW778	9274 GALENA RD	BRISTOL	CDFLT	L J DODD CONSTRUCTION INC		0
117	WNVW778		BRISTOL	CDFLT	L J DODD CONSTRUCTION INC		0
118	WQBM267	2623 Eldamain Rd	Plano	CDFLT	Menards Inc		0
119	WQBM267		Plano	CDFLT	Menards Inc		0
120	WQBM267		Plano	CDFLT	Menards Inc		0
121	WQJD316	1349 A Faxon Rd	Plano	CDFLT	METROPOLITAN AREA NETWORK		0
122	WQJD317	6797 Route 34	Oswego	CDFLT	METROPOLITAN AREA NETWORK		0
123	WQJD318	7150 Plainfield Rd. (Kendall Cnty Line #	PLAINFIELD	CDFLT	METROPOLITAN AREA NETWORK		0
124	WQJD323	16535 Ridge Road (Minooka #92112)	MINOOKA	CDFLT	METROPOLITAN AREA NETWORK		0
125	WQJD368	280 Rt. 31	Montgomery	CDFLT	METROPOLITAN AREA NETWORK		0
126	WQJE749	142 Kirkland Circle	Oswego	CDFLT	METROPOLITAN AREA NETWORK		0
127	WQJE758	6980 Minkler Rd.	Yorkville	CDFLT	METROPOLITAN AREA NETWORK		0
128	WQJE759	6359 Route 47	Yorkville	CDFLT	METROPOLITAN AREA NETWORK		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
129	KPH987	ROUTE 1	PLANO	CDFLT	NELSON ENTERPRISES, INC.		0
130	WLF899	FRAXIER RD & LAURIE LN	'PLANO	CDFLT	NELSON ENTERPRISES, INC.		0
131	WLI620	FRAZIER & LAURIE LANE	PLANO	CDFLT	NELSON ENTERPRISES, INC.		
132	WPQQ601	1 BROADCAST CENTER	PLANO	CDFLT	NELSON ENTERPRISES, INC.		
133	WPUV819	One Broadcast Center	Plano	CDFLT	NELSON MULTIMEDIA, INC.		
134	KNKA760	7694 IMMANUEL ROAD	YORKVILLE	CDFLT	NEW CINGULAR WIRELESS PCS		
135	KNKA760	47 STONEHILL DRIVE	OSWEGO	CDFLT	NEW CINGULAR WIRELESS PCS		
136	WPFV582			CDFLT	NEWARK AMBULANCE DISTRICT		
137	KNAJ944	COR OF RT 52 AND COUNTY LINE RD	MINOOKA	CDFLT	Nextel License Holdings 4		
138	KNAJ944		MINOOKA	CDFLT	Nextel License Holdings 4		
139	WNHJ780	8115 RT 47	YORKVILLE	CDFLT	Nextel License Holdings 4		
140	WNIZ784	9274 GALENA ROAD	BRISTOL	CDFLT	NEXTEL LICENSE HOLDINGS 4		
141	WNIZ784		BRISTOL	CDFLT	NEXTEL LICENSE HOLDINGS 4		
142	WPFF516	1 BRDCAST CTR FRAZIER RD	PLANO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
143	WPFF516		PLANO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
144	WPOF253	ONE BROADCAST CENTER	PLANO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
145	WPOF253		PLANO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
146	WPPJ352	6359 ROUTE 47	YORKVILLE	CDFLT	NEXTEL LICENSE HOLDINGS 4		
147	WPPJ352		YORKVILLE	CDFLT	NEXTEL LICENSE HOLDINGS 4		
148	WPPJ353	280 ROUTE 31	OSWEGO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
149	WPPJ353		OSWEGO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
150	WPPJ360	10318 GALENA ROAD	BRISTOL	CDFLT	NEXTEL LICENSE HOLDINGS 4		
151	WPPJ360		BRISTOL	CDFLT	NEXTEL LICENSE HOLDINGS 4		
152	WPPJ454	"LOT 4, KENDALL POINT BUSINESS"	OSWEGO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
153	WPPJ454		OSWEGO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
154	WPPJ469	6849 RT. 34	OSWEGO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
155	WPPJ469		OSWEGO	CDFLT	NEXTEL LICENSE HOLDINGS 4		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
156	WPSY696	5725 RTE 126	YORKVILLE	CDFLT	NEXTEL LICENSE HOLDINGS 4		
157	WPSY696		YORKVILLE	CDFLT	NEXTEL LICENSE HOLDINGS 4		
158	WPSY697	9316 RTE 34	YORKSVILLE	CDFLT	NEXTEL LICENSE HOLDINGS 4		
159	WPSY697		YORKSVILLE	CDFLT	NEXTEL LICENSE HOLDINGS 4		
160	WPSY698	13349 A FAXON RD	PLANO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
161	WPSY698		PLANO	CDFLT	NEXTEL LICENSE HOLDINGS 4		
162	WPSY852	997 W. RTE. #126	PLAINFIELD	CDFLT	NEXTEL LICENSE HOLDINGS 4		
163	WPSY852		PLAINFIELD	CDFLT	NEXTEL LICENSE HOLDINGS 4		
164	WQBI303	1525 Harvey Rd.	Oswego	CDFLT	Oswego Community Unit Sch		
165	WQBI303		Oswego	CDFLT	Oswego Community Unit Sch		
166	WQBI303	61 Franklin St.	Oswego	CDFLT	Oswego Community Unit Sch		
167	WQBI303		Oswego	CDFLT	Oswego Community Unit Sch		
168	WQBI303	4250 Route 71	Oswego	CDFLT	Oswego Community Unit Sch		
169	WQBI303		Oswego	CDFLT	Oswego Community Unit Sch		
170	WQBI303	570 Colchester Drive	Oswego	CDFLT	Oswego Community Unit Sch		
171	WQBI303	26923 W. Grande Park Blvd.	Plainfield	CDFLT	Oswego Community Unit Sch		
172	WQBI303		Oswego	CDFLT	Oswego Community Unit Sch		
173	WQBI303		Plainfield	CDFLT	Oswego Community Unit Sch		
174	WQBI303	440 BOULDER HILL PASS DR.	OSWEGO	CDFLT	Oswego Community Unit Sch		
175	WQBI303		OSWEGO	CDFLT	Oswego Community Unit Sch		
176	WQBQ861		Montgomery	CDFLT	Oswego Community Unit Sch		
177	WQBQ861		Oswego	CDFLT	Oswego Community Unit Sch		
178	WQBQ861		Oswego	CDFLT	Oswego Community Unit Sch		
179	WQBQ861		Oswego	CDFLT	Oswego Community Unit Sch		
180	WQBQ861		Oswego	CDFLT	Oswego Community Unit Sch		
181	WQBQ861		Oswego	CDFLT	Oswego Community Unit Sch		
182	WQBQ861		Montgomery	CDFLT	Oswego Community Unit Sch		
183	WQEX644		Oswego	CDFLT	Oswego Fire Protection Di		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
184	WQEX644		Oswego	CDFLT	Oswego Fire Protection Di		
185	WPBG274	9274 GALENA RD	BRISTOL	CDFLT	OSWEGO SCHOOL DISTRICT 30		
186	WPBG274		BRISTOL	CDFLT	OSWEGO SCHOOL DISTRICT 30		
187	WNVE268	113 S MAIN ST	OSWEGO	CDFLT	OSWEGO, VILLAGE OF		
188	WNVE268		OSWEGO	CDFLT	OSWEGO, VILLAGE OF		
189	WNVE268	3525 RT 34	OSWEGO	CDFLT	OSWEGO, VILLAGE OF		
190	WPOQ725	VARIOUS LOCATIONS	OSWEGO	CDFLT	OSWEGO, VILLAGE OF		
191	WQHV410		Yorkville	CDFLT	PDQLink		
192	WQHV410		Yorkville	CDFLT	PDQLink		
193	WQHV410		Yorkville	CDFLT	PDQLink		
194	WQHV410		Yorkville	CDFLT	PDQLink		
195	WQHV410		Oswego	CDFLT	PDQLink		
196	WQHV410		Oswego	CDFLT	PDQLink		
197	WQGM894	7 E. MAIN ST.	PLANO	CDFLT	PLANO, CITY OF		
198	WQGM894	1102 CORNELL LN.	YORKVILLE	CDFLT	PLANO, CITY OF		
199	WQGM894		PLANO	CDFLT	PLANO, CITY OF		
200	WQFI655	2810 US HIGHWAY 34	OSWEGO	CDFLT	PORTILLO'S HOT DOGS, INC.		
201	WPUC392	804 S HALE	PLANO	CDFLT	PRECISION CARGO		
202	WPUC392		PLANO	CDFLT	PRECISION CARGO		
203	WPXX858	1855 MARKETVIEW DRIVE	YORKVILLE	CDFLT	QSC MGMT. GROUP, INC.		
204	WPFC911	PRATT RD 1 MI W	PLANO	CDFLT	SANDWICH COMMUNITY UNIT S		
205	WPFC911		PLANO	CDFLT	SANDWICH COMMUNITY UNIT S		
206	KZJ603	RT 47 & LEGION RD	YORKVILLE	CDFLT	SCHMITT, RANDALL		
207	WNQL213	9274 GALENA RD	BRISTOL	CDFLT	SCHMITT, RANDALL		

Dams Report

ID	Name	River	City	Owner	Purpose	Height (ft)	ReplaCost
1	MILHURST LAKE DAM	TRIB FOX RIVER	MILLING	W. W. Rice	R	20	
2	YORKVILLE DAM	FOX RIVER	YORKVILLE	Illinois Department of Na	R	12	
3	BLACK BERRY CREEK DAM	BLACK BERRY CREEK	YORKVILLE	IL DEPT OF CONSERVATION	R	18	

Electric Power Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
1	Dynegy Kendall Energy, LLC	1401 County Line Road	Minooka	EDFLT				

EOC Facilities Report

ID	Name	Address	City	Class	YearBuilt	ShelterCap	Stories	ReplaCost
1	KENDALL COUNTY EOC	1102 CORNELL LANE	YORKVILLE	EFEO	1991		1	$130

Fire Station Facilities Report

ID	Name	Address	City	Class	Stories	YearBuilt	ReplaCost
1	Little Rock Fox Fire Department	5 E North ST	Plano	EFFS	2		
2	Bristol Kendall Fire Protection District	103 E Beaver ST	Yorkville	EFFS	2	1999	5000
3	Lisbon-Seward Fire Protection CO 2	115 N Canal ST	Newark	EFFS	1	1989	200
4	Oswego Fire Protection District #1	3511 Wooley	Oswego	EFFS	2	2009	12000
5	Oswego Fire Protection District #2	2200 Weisbrook DR	Oswego	EFFS	1	1998	3000
6	Newark Fire Protection District	101 E Main ST	Newark	EFFS	2	1980	1300
7	Little Rock Fox Fire Station #2	22 Harris Ave	Millbrook	EFFS	1	2006	1600

ID	Name	Address	City	Class	Stories	YearBuilt	ReplaCost
8	Little Rock Fox Fire Station #3	300 Mitchell Dr	Plano	EFFS	1	2007	1600
9	Bristol Kendall Fire Station #2	2101 McHugh Rd	Yorkville	EFFS	1	2004	3500
10	Bristol kendall Fire Station #3	4400 Rosenwinkle St	Yorkville	EFFS	1	2007	3500
11	Lisbon-Seward Fire Station #2	6410 Chicago Rd	Plattville	EFFS	1	2000	200
12	Oswego Fire Station #3	2200 Galena Rd	Oswego	EFFS	1	2004	3000
13	Jolet Fire Station #10	1599 N John D Paige Dr	Joliet	EFFS	1	2005	3000
14	Little Rock Fox Fire Department	5 E North ST	Plano	EFFS	2		

Hazardous Materials Report

ID	Name	Address	City	Class	EPA ID	Chemical Name
1	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	MANGANESE COMPOUNDS
2	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	PROPYLENE
3	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	XYLENE (MIXED ISOMER
4	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	ZINC COMPOUNDS
5	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	ETHYLENE GLYCOL
6	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	CHROMIUM COMPOUNDS
7	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	NAPHTHALENE
8	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	TOLUENE
9	CATERPILLAR INC.	RTE. 31 BOX 348	AURORA	HDFLT	ILD005070651	DIETHANOLAMINE
10	TRU VUE	9400 W. 55TH ST.	MC COOK	HDFLT	000311744ACI	HYDROGEN FLUORIDE
11	AVTEC INDS. INC.	120 KENDALL POINT DR.	OSWEGO	HDFLT	ILD984791020	MANGANESE
12	PLANO METAL SPECIALTIES	RTE. 34	PLANO	HDFLT	ILD054133079	TRICHLOROETHYLENE
13	PLANO METAL SPECIALTIES	RTE. 34	PLANO	HDFLT	ILD054133079	COPPER
14	PLANO METAL SPECIALTIES	RTE. 34	PLANO	HDFLT	ILD054133079	NICKEL COMPOUNDS
15	REMLINE CO.	RTE. 47 N. OF CANNONBALL TRAIL	YORKVILLE	HDFLT	ILD005112420	N-BUTYL ALCOHOL
16	WAYNE CIRCUITS INC.	106 E. BEAVER ST.	YORKVILLE	HDFLT	ILD046578241	COPPER

ID	Name	Address	City	Class	EPA ID	Chemical Name
17	AAA COOPER TRANSPORT	170 KENDALL POINT DR	OSWEGO	HDFLT	ILD06711425	DIESEL FUEL
18	ANR PIPELINE COMPANY	6650 SANDY BLUFF RD	SANDWICH	HDFLT	ILD006958581	ETHYLENE GLYCOL
19	AT&T COMMUNICATION	866 ROCK CREEK ROAD	PLANO	HDFLT	ILD006980800	LEAD
20	CATERPILLAR LOGISTICS	2001 BASELINE RD	MONTGOMERY	HDFLT		LEAD BATTERIES
21	ELBURN COOPERATIVE	2219 ROUTE 47	NEWARK	HDFLT	ILD025441759	ANHYDROUS AMMONIA
22	NEWARK GRAIN	203 N JOHNSON ST	NEWARK	HDFLT		DIESEL FUEL
23	GRAINCO FS, INC	17854 WABENA ST	MINOOKA	HDFLT	ILD05415336	LEXAR
24	GRAINCO FS, INC	202 W RT 71	NEWARK	HDFLT	ILD054153036	ANHYDROUS AMMONIA
25	GRAINCO FS, INC	8115 RT 47	YORKVILLE	HDFLT	ILD054153036	ANHYDROUS AMMONIA
26	HINTZSCHE FERTILIZER, INC	60 RT 52	MINOOKA	HDFLT		ANHYDROUS AMMONIA
27	BELL TELEPHONE	227 E WASHINGTON ST	OSWEGO	HDFLT	ILD108024050	SULFURIC ACID
28	BELL TELEPHONE	16 E MAIN	PLANO	HDFLT	ILD108024050	SULFURIC ACID
29	BELL TELEPHONE	HYDRAULIC ST	YORKVILLE	HDFLT	ILD108024050	SULFURIC ACID
30	MEADOWVALE, INC	109 BEAVER ST	YORKVILLE	HDFLT	ILD002986842	ANHYDROUS AMMONIA
31	PLANO MOLDING COMPANY	431 E SOUTH ST	PLANO	HDFLT	ILD005113014	SULFURIC ACID
32	PLANO MOLDING COMPANY	500 DUVICK AVE	SANDWICH	HDFLT	ILD005113014	SULFURIC ACID
33	PROBUILD COMPANY	204 WHEATON AVE	YORKVILLE	HDFLT	ILD025916800	TREATED LUMBER
34	UPS FREIGHT, INC	175 KENDALL POINT DR	OSWEGO	HDFLT	ILD005995071	DIESEL FUEL
35	VCNA PRAIRIE	3939 NEEDHAM RD	PLANO	HDFLT		CALCIUM CHLORIDE
36	VERIZON WIRELESS	142 KIRKLAND CIRCLE	OSWEGO	HDFLT		SULFURIC ACID

Medical Care Facilities Report

ID	Name	Address	City	Class	Function	Beds	Stories	ReplaCost
1	Tillers Nursing and Rehab Center	4390 Illinois 71	Oswego	MDFLT	NursHome	109	1	
2	Hillside Rehab and Care Center	1308 Game Farm Rd	Yorkville	MDFLT	NursHome	79	1	

Natural Gas Facilities Report

ID	Name	Address	City	Class	Function	Stories	Year Built	ReplaCost
1	ANR PIPELINE COMPANY	MILLHURST &SANDYBLUFF RD	SANDWICH	GDFLT				1209.9

Police Station Facilities Report

ID	Name	Address	City	Class	Stories	SheltCap	Year Built	ReplaCost
1	Newark Village Police Dept	101 W Lions St	Newark	EFPS				1554
2	County Sheriff Dept	1102 Cornell Ln	Yorkville	EFPS	2		1991	16000
3	Oswego Police Dept	3525 Us Highway 34	Oswego	EFPS	2		1992	12000
4	Yorkville Police Adm	804 Game Farm Rd	Yorkville	EFPS	1		2000	8000
5	Plano Police Dept	9 E North St	Plano	EFPS	2			1500
6	Montgomery Police Dept	1460 SE River Rd	Montgomery	EFPS				1554
7	Millington Police Dept	206 Walnut St	Millington	EFPS				1554

Potable Water Facilities Report

ID	Name	Address	City	Class	Function	Stories	Year Built	ReplaCost
1	CITIZENS UTIL CO-VALLEY MRNA	W/S ROUTE 31 1/S ANCHOR	OSWEGO	PDFLT				36963
2	WELL #3 TREATMENT FACILITY	512 TOWNHOUSE RD	NEWARK	PDFLT		1	1973	1515
3	ILLINOIS AMERICAN WATER PLANT	NEW SANDY BLUFF RD	PLANO	PDFLT				

ID	Name	Address	City	Class	Function	Stories	Year Built	ReplaCost
4	ILLINOIS AMERICAN WATER PLANT	MARLIN DR	OSWEGO	PDFLT				
5	OSWEGO TOWER & PUMP HOUSE	340 S MADISON	OSWEGO	PDFLT		2	2009	1300
6	OSWEGO TOWER & PUMP HOUSE	LENNOX DR	OSWEGO	PDFLT		2	2000	1300
7	OSWEGO TOWER & PUMP HOUSE	OGDEN FALLS BLVD	OSWEGO	PDFLT		2	1998	1500
8	OSWEGO TOWER & PUMP HOUSE	700 COLE AVE	OSWEGO	PDFLT		2	2006	2500
9	OSWEGO TOWER & PUMP HOUSE	TUSCANY TRAIL	OSWEGO	PDFLT		2	2009	3000
10	MINOOKA WATER FACILITY	1100 WILDEY ROAD	MINOOKA	PDFLT			2004	5000
11	OLD MILL HOUSE	751 E MAIN ST	PLANO	PDFLT		3	1850	1100
12	WELL 7	401 KRISTEN ST	PLANO	PDFLT		1	2008	1650
13	WATER TOWER 1	720 E MAIN ST	PLANO	PDFLT			1965	1000
14	WATER TOWER 2	4501 CUMMINS ST	PLANO	PDFLT			2004	1000
15	WATER TOWER	26619 GRANDE PARK BLVD	PLAINFIELD	PDFLT			2003	1664
16	WATER TOWER	750 DUVICK LANE	SANDWICH	PDFLT			1993	571.3
17	PUMPING STATION NO 2	2199 BASELINE RD	MONTGOMERY	PDFLT		1	2007	600

Rail Facilities Report

ID	Name	Address	City	Class	Function	Daily Traffic	Year Built	ReplaCost
1	AMTRAK	W MAIN & S CENTER STREETS	PLANO	RDFLT	PASSENGER			2663

School Facilities Report

ID	Name	Address	City	Class	Students	Stories	Year Built	ReplaCost
1	CHURCHILL ELEM SCHOOL	520 SECRETARIAT LN	OSWEGO	EFS1	703		2005	15759.6

ID	Name	Address	City	Class	Students	Stories	Year Built	ReplaCost
2	LONG BEACH ELEM SCHOOL	67 LONG BEACH RD	MONTGOMERY	EFS1	619		1967	17588.8
3	OLD POST ELEMENTARY SCHOOL	100 OLD POST RD	OSWEGO	EFS1	430		1996	12455.8
4	BOULDER HILL ELEM SCHOOL	163 BOULDER HILL PAS	MONTGOMERY	EFS1	593		1957	15570.6
5	THOMPSON JR HIGH SCHOOL	440 BOULDER HILL PAS	OSWEGO	EFS1	898		1976	35020.6
6	FOX CHASE ELEMENTARY SCHOOL	260 FOX CHASE DR N	OSWEGO	EFS1	708		2001	16363
7	CENTENNIAL ELEM SCHOOL	800 S WEST ST	PLANO	EFS1	360		1964	7294.8
8	P H MILLER ELEM SCHOOL	904 N LEW ST	PLANO	EFS1	489		1964	8283.3
9	PLANO HIGH SCHOOL	704 W ABE ST	PLANO	EFS1	602		1976	38081.23
10	PLANO MIDDLE SCHOOL	804 S HALE ST	PLANO	EFS1	322		1959	10511.2
11	NEWARK ELEM SCHOOL	503 CHICAGO RD	NEWARK	EFS1	120		1952	2869
12	MILLBROOK JUNIOR HIGH SCHOOL	8411 Fox River Dr	MILLBROOK	EFS1	141		1967	3918
13	NEWARK COMM HIGH SCHOOL	413 CHICAGO RD	NEWARK	EFS1	194		1937	9750
14	PRAIRIE POINT ELEM SCHOOL	3650 GROVE RD	OSWEGO	EFS1	563		2005	15759.6
15	OSWEGO HIGH SCHOOL	4250 RTE 71	OSWEGO	EFS1	1870		1964	85617.6
16	TRAUGHBER JR HIGH SCHOOL	570 COLCHESTER	OSWEGO	EFS1	897		2008	37432.4
17	OSWEGO EAST HIGH SCHOOL	1525 HARVEY RD	OSWEGO	EFS1	2090		2005	92860
18	KENDALL CO OPPORTUNITY SCHOOL	33 E STONEHILL RD	OSWEGO	EFS1	61			1049.524
19	YORKVILLE MIDDLE SCHOOL	920 PRAIRIE CROSSING DR	YORKVILLE	EFS1	794		2009	35000
20	LISBON GRADE SCHOOL	127 S CANAL ST	NEWARK	EFS1	125		1954	3500
21	YORKVILLE GRADE SCHOOL	201 W SOMONAUK ST	YORKVILLE	EFS1	223		1952	6200
22	YORKVILLE HIGH SCHOOL ACADEMY	702 GAME FARM RD	YORKVILLE	EFS1	419		1959	18000
23	BRISTOL GRADE SCHOOL	23 HUNT ST	BRISTOL	EFS1	232		1950	7000
24	YORKVILLE HIGH SCHOOL	797 GAME FARM RD	YORKVILLE	EFS1	992		1998	32000

ID	Name	Address	City	Class	Students	Stories	Year Built	ReplaCost
25	CIRCLE CENTER GRADE SCHOOL	901 MILL ST	YORKVILLE	EFS1	543		1968	12000
26	YORKVILLE INTERMEDIATE SCHOOL	103 SCHOOLHOUSE RD	YORKVILLE	EFS1	599		2004	12000
27	CROSS EV. LUTHERAN SCHOOL	8535 RT 47	YORKVILLE	EFS1	236			3480.388
28	ST MARY CATHOLIC SCHOOL	817 CENTER AVE	PLANO	EFS1	207		1958	5000
29	PARKVIEW CHRISTIAN ACADEMY	201 W CENTER ST	YORKVILLE	EFS1	120		1887	1327.267
30	ST LUKE LUTHERAN SCHOOL	63 FERNWOOD RD	MONTGOMERY	EFS1	87			1069.187
31	CHARLES REED ELEMENTARY SCH	2110 CLUBLANDS PKWY	PLAINFIELD	EFS1	788			13750
32	AUTUMN CREEK ELEMENTARY SCHOOL	2377 AUTUMN CREEK BLVD	YORKVILLE	EFS1	451		2009	14000
33	GRANDE RESERVE ELEMENTARY SCHOOL	3142 GRANDE TRAIL	YORKVILLE	EFS1	504		2006	12000
34	BRISTOL BAY ELEMENTARY SCHOOL	427 BRISTOL BAY DR	YORKVILLE	EFS1	321		2008	14000
35	HUNT CLUB ELEMENTARY SCHOOL	4001 HUNT CLUB DRIVE	OSWEGO	EFS1	484		2008	17313.8
36	LAKEWOOD CREEK ELEMENTARY SCHOOL	2301 LAKEWOOD CREEK DR	MONTGOMERY	EFS1	815		2004	18021.6
37	SOUTHBURY ELEMENTARY SCHOOL	820 PRESTON LANE	OSWEGO	EFS1	786		2008	17313.8
38	KARL PLANK JUNIOR HIGH SCHOOL	510 SECRATARIAT LANE	OSWEGO	EFS1	880		2006	37432.4
39	GRANDE PARK ELEMENTARY SCHOOL	26933 GRANDE PARK BLVD	PLAINFIELD	EFS1	447		2007	14691.8
40	BROKAW EARLY LEARNING CENTER	1000 5TH ST	OSWEGO	EFS1	542		2007	7895.2
41	EMILY G JOHNS SCHOOL	430 S MITCHELL DR	PLANO	EFS1	520		2007	10754.7
42	KENDALL CO SPEC ED COOP	201 GARDEN ST	YORKVILLE	EFS1				
43	PLAINFIELD SOUTH HIGH SCHOOL	7800 CATON FARM RD	PLAINFIELD	EFS1				72000
44	AUX SABLE MIDDLE SCHOOL	2001 WILDSPRING PARKWAY	JOLIET	EFS1				21000

ID	Name	Address	City	Class	Students	Stories	Year Built	ReplaCost
45	THOMAS JEFFERSON ELEMENTARY SCHOOL	1900 OXFORD WAY	JOLIET	EFS1				13750

Waste Water Facilities Report

ID	Name	Address	City	Class	Function	Stories	Year Built	ReplaCost
1	FOX METRO WATER RECLAMATION DISTRICT	682 STATE RT. 31	OSWEGO	WDFLT				500000
2	NEWARK SD STP	P.O. BOX 534	NEWARK	WDFLT			1982	6500
3	PLANO STP	1001 SOUTH HALE STREET	PLANO	WDFLT			1986	17250
4	YORKVILLE-BRISTOL SD STP	304 RIVER STREET	YORKVILLE	WDFLT			1957	40000
5	AUX SABLE CREEK BASIN WWTP	8300 BLACK RD	JOLIET	WDFLT			2006	26000
6	MINOOKA WASTEWATER FACILITY	1490 HOLT RD	MINOOKA	WDFLT			2002	85
7	WALMART LIFT STATION	6800 W RT 34	PLANO	WDFLT	PUMPS		1996	90
8	KLATT ST LIFT STATION	4005 KLATT ST	PLANO	WDFLT	PUMPS		2006	150
9	FOX METRO PUMP STATION	3055 ORCHARD RD	OSWEGO	WDFLT	PUMPS		1999	2500
10	FOX METRO LIFT STATION	165 HARRISON ST	OSWEGO	WDFLT	PUMPS		1995	4000
11	FIFTH ST LIFT STATION	404 RT 30	MONTGOMERY	WDFLT	PUMPS		1998	150

Appendix H: Map of Critical Facilities

-See attached map.

Appendix H: USGS Stream Gauge Data:

Top ten flood flows from the USGS Stream Gauge Data for Kendall County

Station	Yorkville, IL		Fox, IL	
River	Blackberry Creek		Fox River Tributary No 2	
Period of Record	1961 - 2008		1961 - 1980	
Latitude	41°40’18”		41°36’28”	
Longitude	88°26’29”		88°28’43”	
Rank	Year	Discharge (cfs)	Year	Discharge (cfs)
1	1996	5,510	1978	320
2	2008	2,130	1975	304
3	1983	2,060	1970	242
4	1997	2,040	1965	218
5	1991	1,360	1972	192
6	1974	1,320	1974	147
7	1970	1,300	1980	125
8	1985	1,290	1966	96
9	2009	1,270	1976	64
10	1979	1,250	1971	57